APPENDIX F

Solid Waste Technical Materials

San Francisco Bay Area Environmental Management Plan

June 1978

This plan was prepared by the Association of Bay Area Governments with a grant and other assistance from the Environmental Protection Agency, in cooperation with Bay Area Air Pollution Control District, Metropolitan Transportation Commission, San Francisco Bay Regional Water Quality Control Board and Counties of the Bay Area with assistance of these agencies: ■ Army Corps of Engineers ■ California Air Resources Board ■ California Department of Health ■ California Department of Transportation ■ Council of Bay Area Resource Conservation Districts ■ Governor's Office of Planning and Research ■ Lawrence Berkeley Laboratory ■ Lawrence Livermore Laboratory ■ San Francisco Bay Conservation and Development Commission ■ State Water Resources Control Board ■ State Solid Waste Management Board ■ Wastewater Solids Study

ABAG

SOLID WASTE MANAGEMENT PLAN

LIST OF TECHNICAL MEMORANDA

Technical Memorandum 1 - "Status of Existing Landfill Sites in the San Francisco Bay Region," Kostick, D., and P. Chiu, March 28, 1977.

Technical Memorandum 2 - "Existing Authorities for Hazardous Waste Management," Perkins, J., and P. Chiu, June 13, 1977.

Technical Memorandum 3 - "Action Program to Reduce Waste Generation and to Promote Source Separation and Recycling in the Bay Area," Kostick, D., and Y. San Jule, April 18, 1977.

Technical Memorandum 4 - "Issues in Current Permit Approval System for Solid Waste Management Facilities and Disposal Sites," Bledsoe, L., April 27, 1977.

Technical Memorandum 5 - "Existing Practices for Hazardous Waste Management in the San Francisco Bay Region," Perkins, J., and P. Chiu, June 13, 1977.

Technical Memorandum 6 - "Current and Projected Quantities of Hazardous Industrial Wastes Produced in the San Francisco Bay Area," Perkins, J., and P. Chiu, June 13, 1977.

Technical Memorandum 7 - "Identification of Possible Class I Site Areas," Perkins, J., January 24, 1978.

Technical Memorandum 8 - "Elements of a Coordinated Permit Approval Process for Solid Waste Management Sites and Facilities," Bledsoe, L., July 27, 1977.

Technical Memorandum 9 - "Issues for Federal and State Legislative and Administrative Action to Promote Source Reduction and Resource Recovery from Solid Waste," San Jule, Y., August 11, 1977.

SW Tech Memo 1 March 77
Peter Chiu
Deirdre Kostick

SOLID WASTE MANAGEMENT PLAN

STATUS OF EXISTING LANDFILL SITES IN THE SAN FRANCISO BAY REGION

TECHNICAL MEMORANDUM NO. 1
MARCH 28, 1977

Introduction

The status of 91 landfill sites in the San Francisco Bay Region is summarized in the attached table. Major findings include:

- o Most of the landfill sites are within the jurisdiction of the Regional Water Quality Control Board (RWQCB), San Francisco Bay Region. Of the 45 active sites within the Region, 7 have leachate problems and 12 have potential problems.

- o According to the disposal site classification system of the State Water Resources Control Board (SWRCB), currently there are 3 Class I, 0 Class II-1, 26 Class II-2, and 7 Class III sites in the Region. Classification for nine other sites is still pending.

- o About 11 of the 45 active sites will reach capacity by the year 1980, and another 7 sites will reach capacity by 1985.

- o Adoption of Waste Discharge Requirements by the Regional Water Quality Control Board is still needed for 9 of the 45 active sites. Revisions of the requirements are needed for 17 of these sites.

These findings are primarily based on information from the Regional Water Quality Control Board files, and the County Solid Waste Management Plans.

Responsibility of SWRCB and RWQCB

On March 2, 1972, the State Water Resources Control Board (SWRCB) adopted Subchapter 15 as an addition to Chapter 3 in Title 23 of the California Administrative Code. This new subchapter governs waste disposal to land and establishes a disposal site and waste classification system on a statewide basis. The classification of disposal sites is based upon the geologic and hydrologic features of the disposal area and the capability for protection of surface and groundwater quality. The categorization of wastes is based upon the threat that the type of waste material presents to water quality.

These additions to the Administrative Code were made pursuant to an amendment to Water Code Section 14040 made during the 1970 legislative session instructing the regional water quality control boards to approve sites suitable for disposal of wastes "consistent with the classifications that shall be adopted by the State Board". During 1971, additional legislation (amendment of Water Code Section 13360) was passed which allows a regional water quality control board to

specify the particular manner by which a solid waste disposal site shall meet waste discharge requirements which relate to protection of surface and groundwater quality. These additions to the Administrative Code and the revision of Section 13360 now permit waste discharge requirements to describe items such as surface water control features, subsurface drainage facilities, waste well features, and procedures for closing installations.

Site Classification

Class I - There must be no possibility of discharge of pollutant substances to usable waters. Artificial barriers may be used for control of lateral waste movement only. Usable groundwater may underlie the site, but only under extreme cases and where natural geological conditions prevent movement of the wastes to the water and provide protection for the active life of the site. Inundation and washout must not occur. All waste groups may be received.

Limited Class I - A special case of Class I site is established where a threat of inundation by greater than a 100-year flood exists. A limitation is placed on the type and amount of Group 1 wastes that may be accepted.

Class II-1 - These sites may overlie or may be adjacent to usable groundwater. Artificial barriers may be used for both vertical and lateral waste confinement in the absence of natural conditions. Protection from a 100-year frequency flood must be provided. Group 2 and 3 wastes can be accepted and under special conditions, certain Group 1 materials may be accepted.

Class II-2 - These sites may have vertical and lateral continuity with usable groundwater, but have features that provide protection of water quality. Group 2 and 3 wastes can be accepted.

Class III - These are sites where Group 3 wastes would be dumped directly into ground or surface water, or where there is inadequate protection to water quality. Only Group 3 wastes may be accepted.

Waste Classification

Group 1 - Group 1 wastes consist of or contain toxic substances which could significantly impair the quality of usable water. Examples include toxic chemical toilet wastes, toxic or hazardous fluids from industrial operations, and pesticides.

Group 2 - Group 2 wastes consist of or contain chemically or biologically decomposable material which does not include toxic substances nor those capable of significantly impairing the quality of usable waters. Examples include ordinary household garbage, rubbish (such as paper, cardboard and tin cans), and street sweepings.

Group 3 - Group 3 wastes consist entirely of nonwater soluble, nondecomposable inert solids. Examples include construction and demolition wastes (such as earth, rock and concrete), and vehicle tires.

Waste Discharge Requirements

The RWQCB after evaluation of a site, issues specific requirements for disposal operations. Included in the requirements are:

- o limits on both the area and depth of waste placement
- o control measures for surface drainage, subsurface drainage, rainfall infiltration
- o leachate and gas control methods
- o compliance with the Monitoring Program as specified by the RWQCB.

STATUS OF EXISTING LANDFILL SITES

1. ALAMEDA COUNTY

Site name or operator (RWQCB file no.)	Location	Size (acres)	Class	RWQCB requirements	Estimated quantities rec'd in 1975 (tons)	Estimated closing date	Status
Albany Landfill (2199.9067)	W. end of Buchanan St., Albany	105	III	Resol. 68-4 (To be revised)	80,000	1980	Temporary dispute between city and operator. The site has had leachat problems.
Berkeley (2199.9065)	N. of Berkeley Marina, Berkeley	40	II-2	Order 76-9	120,000	1981	Leachate problems exist. City has agreed to correct the problem. May, 1973 Violations of RWQCB requirements we noted: old deposited materials wer in contact with Bay water and previ ously dumped material was exposed. March, 1975 Evidence of inflow from Bay was aga noticed. Several areas of the dike are defec tive and permit discharges of leach ate from various points around the site to contaminate the waters of t Bay. January, 1977 The City of Berkeley agreed to cor- rect the problems.
Alameda City Landfill Operated by Alameda Co. Disposal Company (2199.9122)	Doolittle Drive at Alameda	35	II-2	Order 76-126	49,400	1977	Leachate problems exist; RWQCB is allowing operators time to correct the problem, before closing the sit
Durham Landfill Operated by Oakland Scavenger Company (2199.9029D)	W. end of Durham Rd., Fremont	260	II-2	Resol. 67-10 (To be revised by '77)	110,000	1999	Revision of Waste Discharge Require ments (WDR) is needed. Dispute wit USCE over expansion. The site also needs lateral and vertical protecti for groundwater.
Davis Street Operated by Oakland Scavenger Company (2199.9029B)	Davis St., San Leandro	220	II-2	Resol. 464 (To be revised by '77)	164,400	1978	The site does not seem to have sign icant water quality problems.
Marina Operated by Turk Island Company (2199.9037)	S. of San Leandro Marina, San Leandro	135	III	(To be adopted by '77)	39,000	1977	No problems have been noted. Site will be converted to city park and golf course.
Turk Island (2199.9098)	Lincoln Ave., near Marsh Rd., Union City	117	II-2	Resol. 68-43 (To be revised by '77)	15,000	1982	Site operation has been improved. vision of the Waste Discharge Requi ments is needed. A master plan for expansion was sub mitted to the RWQCB.
Alameda Naval Air Station	SW corner of the Air Station	100	Not within RWQCB jurisdic- tion		40,000	1982	
Eastern Alameda Landfill, owned by Ralph Properties, Inc. (2199.9106)	N. side of Vasco Rd., Livermore	103	II-2	Resol. 573 (To be revised by '77)	50,000	2000	Revision of the Waste Discharge Re- quirements is needed. The site does not seem to have wate quality problems.
Pleasanton Garbage (2199.9106)	Site adjacent to Vineyard Ave., and Arroyo Del Valle., Pleasanton	26					CLOSED. Operators are in the proce of proper site closure.
West Winton Landfill Oakland Scavenger Co. (2199.9029E)	W. end of Winton Ave., Hayward	525	II-2	Resol. 72-35, Cleanup & Abate. Order 76-012			CLOSED. Recent operation began in 1970, ended in 1974. Operators are now in the process of improving the site to comply with CAO.

STATUS OF EXISTING LANDFILL SITES

CONTRA COSTA COUNTY

Site name or operator WQCB file no.)	Location	Size (acres)	Class	RWQCB requirements	Estimated quantities rec'd in 1975 (tons)	Estimated closing date	Status
st Contra Costa unty Landfill erated by Richmond nitary Service 199.1035)	Foot of Parr. Blvd., Richmond	350	II-2 & I	Order 76-28 (To be revised)	40,000	2020	The site was temporarily closed by the RWQCB. Separation of materials, adequate cover, and an improved cut off wall have mitigated some of the site problems. September, 1976 The conditions of the site were summarized by the RWQCB at a USCE public hearing. Seepage of toxic wastes has been a significant problem. Neither the barrel storage area nor the liquid waste pond is protected by an impermeable barrier. The barrel storage area has also been affected by unstable slopes. The site owners are involved in a land use dispute with the State Lands Commission (SLC) and the USCE. USCE filed suit in 1972 asserting jurisdiction over future fill operations; the SLC claims ownership over one-half the site. Expansion of site operations has been further hampered by opposition by the USFWS, DFG, State Resources Agency and various environmental groups.
ne Landfill 199.1067)	End of Arthur Rd., Martinez	536	II-2 &	Order 76-37	182,000	2000	July, 1976 Site accepts Group 3 and some Group 1 wastes such as tannery and refinery wastes. Status of Compliance Report was submitted to the RWQCB and control measures were proposed. Groundwater table is high. There have been surface runoff and leachate problems.
cific Disposal stems, Inc., a bsidiary of Industial Tank	Martinez						
Vine Hill Site Baker Site WQCB #5)		130 20	I	Order 71-60 (To be revised by '77)			Sites have been improved in the past two years. The Baker site had some odor problems. Other problems have involved accidents such as an incinerator explosion in August, 1974 and a 2,000 gallon spill of hydrochloric acid in February, 1975. Monthly inspection of the site is needed.
ttsburg Landfill ned by GBS Co. WQCB #5)	E. of Old Antioch Site, Somersville Rd., Antioch		II	Order 74-257	19,500		This site is in the process of being closed. It has low quantities of available cover materials.
S Landfill WQCB #5)	E. of Pittsburgh Site, Somersville Rd., Antioch		II			1980	This was a Class I site. Currently, Group II wastes are put into ponds to soak liquid wastes. No cover materials are being applied. The site is not adequately monitored. The County SWMP recommends closure of the site by 1980.
d Antioch WQCB #5)	NE Corner of Paso Corte Road and Somersville Rd. Intersection, Antioch						Closed in 1968.
tioch-Lynch WQCB #5)	S. of Old Antioch Site			Order 74-269			The site was closed in 1974. It has had leachate and groundwater problems, as well as underground fires. Proper closure is needed.

STATUS OF EXISTING LANDFILL SITES

3. MARIN COUNTY

Site name or operator (RWQCB file no.)	Location	Size (acres)	Class	RWQCB requirements	Estimated quantities rec'd in 1975 (tons)	Estimated closing date	Status
Borello Disposal (2159.5079)	State Hwy. 1, near Pt. Reyes Station	2 ponds 140x80x6'	II-2	Order 73-33			The site accepts septic tank pumpings. Inspection is needed periodically.
Ghillotti Brothers (2159.5034)	Adjacent to diked tideland on Pt. San	18	Pending II-2	Resol. 69-1 (To be revised)	3,900	1985	Revision of Waste Discharge Requirements is needed. The site operation appears satisfactory. Currently, construction debris is accepted.
Redwood Sanitary Landfill, Inc. (2159.5065)	North of Novato Airport, along San Antonio Creek	600	II-2	Order 75-68	120,000	2000+	The site has been improving under the supervision of geologists (Cooper & Clark). 420 acres are diked; existin operation is on 150 acres. It does not have water quality problems so far.
San Quentin Disposal (2159.5049)	Point San Quentin adjacent to diked tideland, San Rafael	30	III	Resol. 69-2 (To be revised)	46,800	1983	Revision of WDR is needed. Site operation appears satisfactory.
West Marin Landfill Martinelli (2159.5099)	Point Reyes	50	Pending	(To be adopted by '77)	4,420	1985-2010	Waste Discharge Requirements are needed. Operation has been improved to correct a potential leachate problem.
Edgewood owned by City of Mill Valley	Edgewood Road						Abandoned reservoir. Will be used as open space when filled. Accepts only "clean fill".
San Rafael	Near San Rafael Sewage Treatment Plant						Disposal site for street sweepings. Operation was halted by USCE request for permit application.
Marin Debris Maggiora & Ghillotti (2159.5063)	NW of Intersection Sir Francis Drake and U.S. Highway 17, San Rafael		III	Resol. 69-14			ABANDONED.
Larkspur							ABANDONED.
Angel Island							ABANDONED.
Central Marin							ABANDONED.
Bolinas							ABANDONED.
Stinson Beach							ABANDONED.
Hamilton Field							ABANDONED.

STATUS OF EXISTING LANDFILL SITES

NAPA COUNTY

Site name or operator (RWQCB file no.)	Location	Size (acres)	Class	RWQCB requirements	Estimated quantities rec'd in 1975 (tons)	Estimated closing date	Status
erican Canyon 139.3033)	W. of Rio Del Mar Subdivision along Napa River	311	Pending II-2	Resol. 68-24 (To be revised by '77)	116,000	2000	Litigation between the site owner and the U. S. Corps of Engineers on land use issue was pending as of Feb. 1977. Revision of Waste Discharge Requirements is needed. According to RWQCB staff, this is a good site.
listoga erated by per Valley ndfill Co. 39.3076)	NE of St. Helena; off Silverado Trail, Napa Valley	55	Pending II-2	(To be adopted by '77)	7,280	2000	Leachate problems were corrected with proper control facilities. A technical report on the site has been submitted to RWQCB.
rryosa Garbage rvice WQCB #5)							
e State Hospital	2 Miles SE of the Hospital						ABANDONED.
a City	1 Mile S of Imola Avenue						ABANDONED.
nt George Area	Near State Hwy. 121, 4 Miles E of Silverado Trail						ABANDONED.
terans Home	¼ Mile NW of Veterans Home in Yountville						ABANDONED.
ville Grade	2 Miles SW of Oakville						ABANDONED.
Helena	Near Howell Mountain Rd., 1 Mile E of Silverado Trail						ABANDONED.
itarium	Near Deer Park Rd., 1 Mile E of Silverado Trail						ABANDONED.
ific Union College	1 Mile W of Pacific Union College						ABANDONED.
Calistoga posal Site	Near Calistoga Trail 3 Miles E of Calistoga						ABANDONED.

5. SAN FRANCISCO COUNTY

Site name or operator (RWQCB file no.)	Location	Size (acres)	Class	RWQCB requirements	Estimated quantities rec'd in 1975 (tons)	Estimated closing date	Status
Chet C. Smith (2169.6020)	Candlestick Park		II & III	Order 72-5			The site has been closed. It has leachate problems and should be inspected during wet weather.
Pier 94 (2169.6022)	San Francisco		III	Order 72-9 75-35			July, 1976 A compliance monitoring report note several site problems: leachate, high concentrations of total and di solved sulfides in the receiving waters in the Bay, depleted dissolv oxygen levels in areas of high sulf concentration, discoloration of Bay waters, and strong hydrogen sulfide odors at the site. These problems have been frequently observed durin site inspections over the past four years.

STATUS OF EXISTING LANDFILL SITES

5. SAN MATEO COUNTY

Site name or operator (RWQCB file no.)	Location	Size (acres)	Class	RWQCB requirements	Estimated quantities rec'd in 1975 (tons)	Estimated closing date	Status
urlingame 2179.7005B)	1001 Airport Blvd., Burlingame	90	II-2	Resol. 695 (To be revised by '77)	18,200	1978	Revision of the WDR is needed. Better site operation may be necessary, according to RWQCB staff.
an Mateo 2179.7035 A & B)	End of 3rd Ave., San Mateo	20	Pending	Resol. 404 (To be revised by '77)	13,000	1978	Better site operation is necessary. Revision of Waste Discharge Requirements is needed.
olma Disposal) Hillside	Base of San Bruno Mt. Skyline Blvd. & St. Francis Blvd., Colma;	a)	Pending	(To be adopted by '77)	a) 36,400	1984	Waste Discharge Requirements are needed.
) Junipero Serra 2179.7075)	Junipera Serra Blvd., and Collins Avenue, Daly City	b) 15			b) 18,200		
aly city ussel Rock 2179.7051)	Adjacent to Mussel Rock	43	II-2	Resol. 77-6	49,400	1977	The site is in a seismically active area; landslide and leachate problems are evident. The site is unsuitable for landfill.
enlo Park 2179.7045)	Marsh Road, Menlo Park	47	II-2	Order 74-40	174,200	1980	This site does not seem to have water quality problems.
outh County Disposal strict, owned by slie Salt Co., 2179.7067)	Marsh Road. Menlo Park	30	II-2	Order 71-81 (To be revised by '77)	78,000		Revision of Waste Discharge Requirements is needed.
Mountain rinda Los Trancos ned by Browning & rris 2179.7053)	Ox Mountain, 1 Mile E of Half Moon Bay	60	II-2	Order 76-70			This is a new site with model leachate and runoff controls.
lf Moon Bay 2179.7076)	Half Moon Bay	12	II-2 & III	Order 75-65	7,800		CLOSED.
isbane	Sierra Point Brisbane						CLOSED. RWQCB notes recent evidence of disposal of Group III wastes.
scadero WQCB #3)	E of Hwy. 1, on County Road 35	14	II-2	Order 73-42	3,900	2000	Late monitoring reports have been a problem.

7. SANTA CLARA COUNTY

Site name or operator (RWQCB file no.)	Location	Size (acres)	Class	RWQCB requirements	Estimated quantities rec'd in 1975 (tons)	Estimated closing date	Status
Marshland Development Operated by Marshland Development Co. (2189.8046 & .8030)	N of State Hwy. 237, West Milpitas Road, Alviso	53	II-2	Order 73-22 (To be revised)	98,000		Revision of Waste Discharge Requir ments is needed. The site is maini Class III site and is accepting lim ited Group 2 wastes. It does not s to have water quality problems.
Newby Island Operated by BFI (International Disposal Co. of California) (2189.8047)	W end of Dixon Landing Road Milpitas	344	II-2	Order 75-22	450,000	1990	The site does not seem to have wat quality problems.
Nine-Par (2189.8050)	Los Estero Road, Alviso	72	II-2	Order 75-18	144,000	1984	The site has potential leachate pr lems. It has been improved, but r quires surveillance.
Guadalupe Operated by Green Valley Disposal Co. (2189.8068)	Guadalupe Mines Rd., ½ Mile south of Camden Avenue, Los Gatos	40	Pending II-2	(To be adopted by '77)	100,000	2000	Waste Discharge Requirements are n ed. The site may have water quali problems.
Mountain View Operated by Easley & Brassy (2189.8010A)	N end of Stierlin Rd., Mountain View	50	II-2	Order 70-67 (To be revised)	633,000	1990	Revision of Waste Discharge Requir ments is needed. Groundwater, lea ate, and gas monitoring programs a carried out routinely. The site w model for most state regulations.
Stierlin Road Owned and operated by Ferrari Bros. (2189.8055)	NE end of Stierlin Rd., Mountain View	50	II-2	Order 73-51	30,000	1990	The site does not seem to have wat quality problems.
Palo Alto Operated by Dept. of Public Works (2189.8070)	NE of Embarcadero Rd., Palo Alto	154	II-2	Order 77-3	119,000	1981	Potential water quality problems a exist. County plan notes lack of adequate daily cover as most signi icant deficiency.
Santa Clara Operated by All Purpose Disposal (2189.8026A)	Lafayette Street, Santa Clara	73	II-2	Order 73-77	107,000	2000	This site does not seem to have wa quality problems. Site operation good,
San Jose Operated by City of San Jose Public Works Department (2189.8014A)	Singleton Road at Coyote Creek, San Jose	62	II-2	Order 71-6 (To be revised)	89,000	1978	Revision of Waste Discharge Requir ments is needed. The site has poi tial leachate problems. Site has other problems - water quality, a quality, lack of cover, and litter
South Valley Refuse Disposal Inc. (2189.8069)	E end of Burgeet Ave., Morgan Hill	53	III	Order 76-89			The site does not have water quality lems.
Sunnyvale Operated by Sunnyvale Specialty Garbage and Refuse (2189.8052)	N side of Caribbean at Cross-Coman Ave., Sunnyvale	78	Pending II-2	(To be adopted by '77)	141,000	1981	Waste Discharge Requirements are ed. The site has potential leachi and fire problems. Infrequency o cover material application was no in the county plan.
Owens Corning Fiberglass Co. (2189.8052)	Opposite San Jose/ Santa Clara Water Pollution Control	66	Pending II-2	(To be adopted by '77)	13,000	1985	The site may have water quality p lems. Waste Discharge Requiremen are needed. Site operation has i proved.
Singleton Road	San Jose		II-2				ABANDONED. The site needs occasi monitoring.
Moffett Field Owned and Operated by U.S. Navy	Moffett Naval Air Station	73	II-2	Not within RWQCB jurisdiction.	8,000	2000	
Pacheco Pass Operated by South Valley Disposal (RWQCB #3)	4 Miles E of Gilroy, Pacheco Pass Rd. at Bloomfield Road	83	II-2	Order 72-55	44,000	2000	The site is well operated accordi the county plan.
San Martin Operated by South Valley Refuse Disposal, Inc. (RWQCB #3)	Llagas Street at North Street, San Martin		III	Order 72-34			Since Oct. 1972, only Group III m rials have been accepted.

STATUS OF EXISTING LANDFILL SITES

SOLANO COUNTY

ite name or operator QCB file no.)	Location	Size (acres)	Class	RWQCB requirements	Estimated quantities rec'd in 1975 (tons)	Estimated closing date	Status
ano County rated by Braito arprises 29.2031)	155 Columbus Parkway, Benicia	250	II-2	Order 75-36	3,900	1980	The site has a lot of leachate, according to RWQCB staff, and close surveillance of the site operation is needed.
ific Reclamation Disposal, Inc. rmerly J&J Disposal, holly-owned subsidy of Industrial k, Inc.) 29.2017)	Benicia	281	I	Order 76-99	260,000 Barrels		The site had runoff and pond overflow problems. Various geological, engineering and remedial work has been performed by the owner since 1973. Site operation is now satisfactory.
eler Island ed by Material posal Corp. 29.2006)	Wheeler Island	180	III	(To be adopted)			Revision of Water Discharge Requirements is needed. Currently, the site is not in operation. The "Preliminary Suisun Marsh Protection Plan" October, 1976, (prepared by BCDC) recommends that the site should not be permitted to resume operation since it would involve filling tidal marsh.
rfield rated by Solano bage Co. 29.2035)	NE of Fairfield	67	Pending II-2	(To be adopted)	19,500		December, 1975 The report, "Geotechnical Investigation and Design Studies, Solano Garbage Company Disposal Site, Solano County, California" was submitted to RWQCB. Groundwater table at the site is high. The RWQCB is working on discharge requirements. The "Preliminary Suisun Marsh Protection Plan" October, 1976, recommends that expansion of the site or development of a new site in the Protrero Hills should not be permitted.
ifornia Medical ilities 29.2036)	SE of Vacaville	2.1	II-2	Order 76-66			Site is not for public use; it accepts only wastes from the prison.
Landfill QCB #5)	4 Miles SE of Vacaville, Hay Road near Rio Dixon Highway	162			25,000	2000	
verton Co. rmerly J&J posal Site II) QCB #5)	Corner of Collinsville and Rio Vista Roads	51	Anticipated II-2				Not yet in operation according to the county SWMP.
ch Bros. lling QCB #5)	Flannery Road and Rio Dixon	20					Only drilling mud is accepted.
Vista QCB #5)	Airport Road., North of Rio Vista	20	II-2		3,500	1983	
e Island . Navy deral isdiction)	Mare Island Naval Base	35					RWQCB has no jurisdiction since this is a federal installation.

STATUS OF EXISTING LANDFILL SITES

9. SONOMA COUNTY

Site name or operator (RWQCB file no.)	Location	Size (acres)	Class	RWQCB requirements	Estimated quantities rec'd in 1975 (tons)	Estimated closing date	Status
Sonoma (2149.4018)	S. Hwy. #116, 5 Miles from Sonoma	28	II	Resol. 707 (To be revised by '77)	62,000	1977	Adjacent site could be opened. Revision of Waste Discharge Requirements is needed.
Annapolis (RWQCB #1)	On Annapolis Road, 1 Mile NW of Annapolis	40			1,000	2000+	
Central (RWQCB #1)	Mecham Road, SW of Cotati	395	II-1		120,000	2000+	
Guerneville (RWQCB #1)	Pocket Drive, 3 Miles from Guerneville	90			12,000	1980+	
Healdsburg (RWQCB #1)	Alexander Valley Road, 2.5 Miles from Healdsburg	121	II		118,000	2000+	
Occidental (RWQCB #1)	Stoetz Lane, 3 Miles from Occidental	4			2,160	1977	
Roblar (RWQCB #1)	Roblar Road, 6.5 Miles from Cotati						CLOSED.
Windsor (RWQCB #1)	Off Slusser Road, 8 Miles from Santa Rosa						CLOSED.
Cloverdale (RWQCB #1)	Pine Road Mt., 4 Miles from Cloverdale						CLOSED.

SW/Tech Memo 2/April 77
Revised June 13, 1977
Jeanne Perkins
Peter Chiu

SOLID WASTE MANAGEMENT PLAN

EXISTING AUTHORITIES FOR HAZARDOUS WASTE MANAGEMENT

TECHNICAL MEMORANDUM NO. 2
June 13, 1977

I. Introduction

This technical memorandum contains:

- o Brief descriptions of Federal and State laws and resulting programs that deal with hazardous waste management;
- o Definitions of hazardous wastes contained in Federal and State law; and
- o A synopsis of Federal and State agencies having responsibility for various aspects of hazardous waste management.

Major findings include:

- o At least 27 statutes deal with various aspects of hazardous waste management, including planning, generation, packaging, transportation, disposal, and resource recovery.
- o Existing Federal statutes place primary responsibility for management of hazardous wastes on the Environmental Protection Agency (EPA). However, the Departments of Labor (DOL), of Health, Education and Welfare (HEW), and of Transportation (DOT), as well as the U.S. Coast Guard and the Nuclear Regulatory Commission (NRC), have special responsibilities.
- o State codes give the State Department of Health primary responsibility for setting standards and regulations for handling, processing, and disposal of these wastes. The Department also evaluates and coordinates research.
- o The regional water quality control boards are charged with surface and groundwater quality; the air pollution control districts with protecting air quality; the Department of Fish and Game with protecting fish and wildlife; and the Department of Transportation with cleaning up spills.
- o The State Solid Waste Management Board is authorized to coordinate solid waste management planning and to set minimum standards for sites and transfer/processing stations. The Board is also authorized to provide technical assistance.

II. Definitions

It is recognized that a standardized definition of hazardous wastes is needed. At present, statutes define "hazardous waste" in a variety of ways. For example, the Federal Resource Conservation and Recovery Act of 1976 contains this definition:

> ...a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may -
> (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness, or
> (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

On the other hand, the California Hazardous Waste Control Act of 1972 (Section 25117) uses "hazardous waste" to mean:

> ...any waste material or mixture of wastes which is toxic, corrosive, flammable, an irritant, a strong sensitizer, which generates pressure through decomposition, heat or other means, if such a waste or mixture of wastes may cause substantial personal injury, serious illness or harm to wildlife, during, or as a proximate result of any disposal of such wastes or mixture of wastes. The terms "toxic," "corrosive," "flammable," "irritant," and "strong sensitizer" shall be given the same meaning as in the California Hazardous Substances Act...

The Act also contains this definition of "extremely hazardous waste" in Section 25115:

> ...any hazardous waste or mixture of hazardous wastes which, if human exposure should occur, may result in death, disabling, personal injury or illness during, or as a proximate result of, any disposal of such waste or mixture of wastes because of its quantity, concentration, or chemical characteristics.

III. Summary of Federal Statutes

The Federal statutes affecting the management of hazardous wastes are described briefly in the following paragraphs and summarized in Table 1.

a) Resource Conservation and Recovery Act of 1976 (PL94-580)

This act deals with most aspects of hazardous waste management, including generation, packaging, transportation, and disposal of hazardous wastes. Section 3001 directs the EPA, by April 1978, to identify which wastes are hazardous and in what quantities, qualities, concentrations, and forms of disposal they become a threat to health or the environment. The Governor of any State may also petition to have any substance so listed and the Administrator is then given 90 days in which to act on this petition. Sections 3002 and 3003 require EPA to issue standards for generators and transporters of hazardous wastes respecting record-keeping, practices, labeling, appropriate containers, use of a manifest system, and reporting of quantities and disposition. Substances listed by both the Administrator and the Secretary of Transportation must be consistent with the requirements of the Hazardous Materials Transportation Act.

Most importantly, Section 3005 requires persons owning or operating facilities for the treatment and storage of hazardous wastes to obtain permits within 90 days after identification and listing. Permit applications must indicate composition,

TABLE I

FEDERAL STATUTES RELATED TO HAZARDOUS WASTE MANAGEMENT

STATUTE	ADMINISTERING AGENCY	DESCRIPTION
Resource Conservation and Recovery Act of 1976 (PL94-580)	Environmental Protection Agency (EPA)	Places primary responsibility to regulate management of hazardous wastes on EPA
Toxic Substances Control Act of 1976 (PL94-469)	EPA	Authorizes research and regulation of those substances found to be hazardous
Section 112 of the Clean Air Act Amendments of 1970 (PL91-604)	EPA	Authorizes the setting of standards for hazardous air pollutants and controls the incineration of hazardous wastes
Federal Water Pollution Control Act Amendments of 1972 (PL92-500)	EPA	Authorizes control over toxic pollutants discharged into water from point sources, the removal of toxic pollutants from critical port and harbor areas, and a plan describing the process for the disposal of pollutants
National Environmental Policy Act of 1969 (NEPA) (PL91-190)	Not Specified	Requires the preparation of an environmental impact statement for all Federal hazardous waste management activities
The Occupational Safety and Health Act of 1970 (OSHA) (PL91-596)	Department of Labor	Authorizes the setting of mandatory standards to protect people working with hazardous materials
The Poison Prevention Packaging Act of 1970 (PL91-601)	Dept. of Health, Education, and Welfare (HEW)	Authorizes the establishment of special packaging standards for hazardous household substances
The Federal Hazardous Substances Labeling Act of 1960 (PL86-613)	Dept. of Transportation (DOT)	Prohibits the transport of hazardous substances that have been misbranded or the labels have been removed
Hazardous Materials Control Act of 1970 (PL91-458)	DOT	Authorizes an evaluation of the hazards associated with transporting hazardous materials
Transportation of Explosive Act (U.S. Code, Title 18, ch.39)	DOT	Prohibits the unregulated transport of dangerous materials
The Safety Regulation of Civil Aeronautics Act of 1958 (PL85-726)	Federal Aviation Administration of DOT	Authorizes FAA to develop air transportation standards to provide adequate safety
The Hazardous Cargo Act (U.S. Code, Title 46, ch.7)	U.S. Coast Guard	Places controls on the water transport of dangerous substances
The Food, Drug and Cosmetic Act Animal Drug Amendments of 1968 (PL90-399)	Not Specified	Prohibits the misbranding of certain consumer items
The Marine Protection Research, and Sanctuaries Act of 1972 (PL92-532)	EPA	Prohibits the transport for ocean dumping of many extremely hazardous wastes
The Coastal Zone Management Act of 1972 (PL92-583)	Not Specified	Requires that coastal management agencies regulate hazardous waste disposal
Section 212 of the Resource Recovery Act of 1970 (PL91-512)	EPA	Requests a study of the feasibility of a system of national hazardous waste disposal sites
Safe Drinking Water Act of 1974 (PL93-523)	EPA	Authorizes regulation of underground injection of toxic wastes
The Atomic Energy Act of 1954, as amended (PL83-703)	NRC and private industry	Authorizes the management of radioactive wastes generated in fission reactions
The Armed Forces Appropriation Authorization Acts of 1969 and 1979 (PL91-121; PL91-441)	Not Specified	Limits the use of Federal funds for disposal of chemical and biological warfare agents
The Federal Environmental Pesticide Control Act of 1972 (PL92-516)	EPA	Requires the establishment of procedures and regulations for the disposal of pesticides

quantities, the rate at which such wastes are to be disposed of, and the location of the disposal site. EPA or States (in jurisdictions having hazardous waste programs) may revoke permits of nonconforming users. Interim authorization is granted to anyone who has applied for a permit.

By April 1978, EPA must publish, according to Section 3006, guidelines to enable the States to develop approved hazardous waste programs. States with existing programs may receive interim authorization upon a showing that their programs are substantially equivalent to the Federal program (this temporary authorization lasts for two years). The EPA may withdraw authorization within 90 days of notice of non-conformities.

In order for EPA and State officials to enforce these requirements, Section 3007 authorizes them to inspect facilities, copy records, and obtain samples (information obtained will then be made public).

Compliance provisions of the law will be enforced through civil and criminal penalties specified in sections 3008 and 3009. Civil actions will be commenced in Federal courts for violations extending beyond 30 days for notification, and violators will carry liability for a penalty of $25,000 for each day of continued non-compliance. Criminal penalties may be imposed on persons transporting hazardous wastes without a permit or making falsifications in labeling and reporting; Penalties of $25,000 per day or imprisonment for not more than one year authorized. States may not provide for penalties less than those provided under the bill.

Section 3011 authorizes $25,000,000 for both fiscal years 1978 and 1979 to the States to implement these hazardous waste provisions.[1]

b) Toxic Substances Control Act of 1976 (PL94-469)

The act requires adequate data to "be developed with respect to the effect of chemical substances and mixtures on health and the environment" by "those who manufacture and those who process such chemical substances and mixtures." It also authorizes EPA to regulate "chemical substances and mixtures which present an unreasonable risk of injury to health or the environment" and the taking of action "with respect to chemical substances and mixtures which are imminent hazards" before they become wastes.

c) Section 112 of the Clean Air Act Amendments of 1970 (PL91-604)

The act authorizes the administrator of EPA to set standards for hazardous air pollutants at any level "which in his judgement provides an ample margin of safety to protect the public health." Hazardous air pollutants are defined as those which "may cause, or contribute to an increase in mortality or an increase in serious irreversible or incapacitating reversible, illness." Asbestos, beryllium, and mercury are three hazardous pollutants for which emission limits have been promulgated. The control strategy is to protect the public health and welfare by placing the burden of standards compliance on the air polluter. The standards are based on health effects as well as environmental, social, economic, and other pertinent factors. The act also controls the incineration of hazardous wastes.[1]

d) The Federal Water Pollution Control Act Amendments of 1972 (PL92-500)

This act provides extensive control over the disposal or discharging of certain hazardous wastes in water.

Section 115 of the act directs EPA to locate and contract for the "removal and

appropriate disposal of in-place toxic pollutant materials from critical port and harbor areas."

Section 502 defines "toxic pollutant" as "those pollutants...which...after discharge and upon exposure, ingestion, inhalation or assimilation into any organism ...will cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions...or physical deformations on such organisms or their offspring."

Four sections of Title III of the act contain provisions authorizing control over toxic pollutants discharged into water from point sources. It appears that, unless a waste disposal facility discharges toxic pollutants into a waterway through a "discernable, discrete conveyance " such as an outfall pipe, it will be exempt from the act's provisions. Hazardous waste treatment facilities should not be exempt, however.

Section 301(f) prohibits the "discharge of any radiological, chemical, or biological warfare agent, or high level radioactive waste into the navigable waters."

Section 306 requires EPA to publish national standards of performance for new point source categories reflecting "the greatest degree of effluent reduction achievable..., including, where practicable, a standard permitting no discharge of pollutants."

Section 307 requires EPA to identify and publish effluent standards for a list of toxic pollutants or combinations of such pollutants. Standards are to be set "at that level which the Administration determines provides an ample margin of safety."

Section 311 is designed to protect the navigable waters and adjoining shorelines of the United States and the waters of the contiguous zone from "hazardous substance" discharges. Designed primarily to control spills from vessels and onshore or offshore facilities, Section 311 requires violators to pay a fixed cost for each hazardous substance unit unlawfully discharged.

Section 208(b) requires areawide waste treatment management plans to be prepared and include "...(J) a process to control the disposition of all residual waste generated in such area which would affect water quality, and (K) a process to control the disposal of pollutants on land or in subsurface excavations within such area to protect ground and surface water quality."[1]

e) National Environmental Policy Act of 1969 (NEPA) (PL91-190)

Section 101(b) of NEPA requires the Federal Government to "use all practicable means" to attain the widest range of beneficial uses without degrading the environment or risking health or safety. In order to ensure that the environmental policies expressed in Section 101 are effectively carried out, Section 102(2)(C) requires all agencies of the Federal Government to prepare detailed environmental impact statements for all "major Federal actions significantly affecting the quality of the human environment." All Federal hazardous waste management activities thus clearly fall under NEPA's jurisdiction.[1]

f) The Occupational Safety and Health Act of 1970 (OSHA) (PL91-596)

This act authorizes the Department of Labor to set mandatory standards to protect the occupational safety and health of all employers and employees of businesses engaged in interstate commerce. Section 6(b)(5) deals specifically with toxic materials and other harmful agents, requiring the Secretary to "set the standard

which most adequately assures...that no employee will suffer material impairment of health or financial capacity" from regular exposure to such hazards. Employees of hazardous waste generators and treatment and disposal facilities engaged in interstate commerce thus are clearly entitled to the act's protection. Standards issued under the act can directly impact some phases of hazardous waste management. For example, the OSHA-enforced asbestos regulation requires that certain wastes be packaged for disposal.[1]

g) The Poison Prevention Packaging Act of 1970 (PL91-601)

This act authorizes the Department of Health, Education and Welfare to establish special packaging standards for hazardous household substances whenever it can be shown that serious personal injury or illness to children can result from handling, using, or ingesting such substances. Hazardous household substances already identified in regulations include oven cleaners, cigarette and charcoal lighter fluids, liquids containing turpentine and methyl alcohol, and economic poisons (pesticides).[1]

h) The Federal Hazardous Substances Labeling Act of 1960 (PL86-613)

This act authorizes the Department of Transportation to identify hazardous substances and prohibit the transport of such substances if their containers have been misbranded or the labels have been removed. The Act also authorizes the seizure of misbranded hazardous substances and requires the courts to direct the ultimate disposition of such seized substances.[1]

i) The Hazardous Materials Control Act of 1970 (PL91-458)

This act authorizes the Department of Transportation to evaluate hazards associated with hazardous materials transport, establish a central accident reporting system, and recommend improved hazardous material transport controls.[1]

j) The Transportation of Explosives Act (U.S. Code, Title 18, ch.39)

This act prohibits the knowing unregulated transport of explosives, radioactive materials, etiologic (disease-causing) agents, and other dangerous articles in interstate commerce unless the public interest requires expedited movement or such transport involves "no appreciable danger to persons or property." The Department of Transportation administers this act.[1]

k) The Safety Regulation of Civil Aeronautics Act of 1958 (PL85-726)

This act authorizes the Federal Aviation Administration of DOT to establish air transportation standards "necessary to provide adequately for national security and safety in air commerce".[1]

l) The Hazardous Cargo Act (U.S. Code, Title 46, ch.7)

This act places regulatory controls on the water transport of explosives or dangerous substances, authorizing the U.S. Coast Guard to publish regulations on packing, marking, labeling and containerization of such substances.[1]

m) The Food, Drug and Cosmetic Act Animal Drug Amendments of 1968 (PL90-399)

This act prohibits the adulteration and misbranding of certain consumer items and requires the disposal by destruction or sale of any items seized under the act.[1]

n) The Marine Protection, Research, and Sanctuaries Act of 1972 (PL92-532)

This act prohibits the transport from the United States for the purpose of ocean dumping any radiological, chemical, or biological warfare agents, high level radioactive wastes, or (except as authorized by Federal permit) any other material. In granting permits for ocean dumping, the EPA Administrator must consider "appropriate locations and methods of disposal or recycling, including land-based alternatives, and the probable impact of such use upon considerations affecting the public interest." [1]

o) The Coastal Zone Management Act of 1972 (PL92-583)

In declaring it national policy to preserve and protect the resources of the Nation's coastal zone, this act recognizes waste disposal as a "competing demand" on coastal zone lands which has caused "serious environmental losses." Because applicants for Federal coastal zone management grants must define "permissible land and water uses within the coastal zone," an applicant's failure to regulate hazardous waste disposal within such area so that it qualifies as a "permissible use" can serve as a basis for denying program funds under the act.[1]

p) Section 212 of the Resource Recovery Act of 1970 (PL91-512)

This act requires EPA to study the feasibility of a system of national disposal sites for hazardous wastes. The act authorizes no regulatory activities, however.[1]

q) Safe Drinking Water Act of 1974 (PL93-523)

Sections 1421 through 1424 authorize EPA to regulate underground injection to protect underground sources of drinking water. Underground injection is not used as a method of disposing of toxic liquid wastes in the Bay Area.

r) The Atomic Energy Act of 1954, as amended (PL83-703)

This act authorizes both AEC (now NRC) and private industry to manage radioactive wastes generated in fission reactions.[1]

s) The Armed Forces Appropriation Authorization Acts of 1969 and 1970 (PL91-121; PL91-441)

These acts prohibit the use of Federal funds for the transportation, open-air testing, or disposal of any lethal chemical or biological warfare agent in the United States except under certain conditions requiring prior determination of the effect on national security, hazards to public health and safety, and practicability of detoxification prior to disposal.[1]

t) The Federal Environmental Pesticide Control Act of 1972 (PL92-516)

This act requires EPA to establish procedures and regulations for the disposal or storage of packages, containers, and excess amounts of pesticides. EPA is also required to "accept at convenient locations for safe disposal" those pesticides whose registration is suspended to prevent an imminent hazard and later cancelled if the pesticide owner so requests.[1]

IV. SUMMARY OF STATE STATUTES AND RESULTING PROGRAMS

State statutes affecting hazardous waste management are described briefly in the following paragraphs and are summarized in Table 2.

a) Section 14040 and 13360 of the Porter-Cologne Water Quality Control Act and Subchapters 9.1, 15 and 23 of Chapter 3, Title 23, California Administrative Code

This act authorizes the California regional water quality control boards to set waste discharge requirements for all disposal sites to protect surface and groundwater quality. These requirements are based on disposal site characteristics and on a waste classification system established by subchapter 15. The regional boards conduct routine monitoring and surveillance programs for all sites to ensure compliance with the discharge requirements. They also regulate liquid waste haulers through a system of permits. Violations of waste discharge requirements may result in administrative enforcement or court enforcement through injunctions, civil fines, and criminal penalties.[2]

b) Hazardous Waste Control Act of 1972 (adding Chapter 6.5 of Division 20 to the Health and Safety Code; Sections 25100 through 25185)

This act authorizes the California State Department of Health to develop regulations governing the handling, processing and disposal of hazardous wastes.[2] Amendments to the Code have been proposed to ensure compliance with the Federal Water Pollution Control Act Amendments of 1972.[3]

Section 25150 requires that the Department of Health consult with the Department of Industrial Relations, Division of Industrial Safety regarding chemical waste storage and handling.[2]

Section 25160 gives the State Department of Health "jurisdiction, with the Regional Boards, in regulating liquid waste haulers ."[2] The State Department of Health and the State Water Resources Control Board worked together to establish a new, combined manifest (California Liquid Waste Hauler Record) to be used by both agencies.[3] It also authorizes any official or officer of the California Highway Patrol to demand a list from any hauler of the hazardous wastes being carried and information on what should be done should a spill occur.[2]

Section 25170 authorizes the State Department of Health to evaluate and coordinate the research and development of methods for handling and disposal of hazardous wastes.[2] It also authorizes responsibility for conducting appropriate studies and maintaining a technical reference center on hazardous waste disposal, recycling practices and related information for public and private use.[2]

EPA funded the first part of a series of studies to develop sampling and analysis techniques for hazardous wastes and to develop guideline lists of incompatible wastes.[3] The Department also conducted a study in cooperation with the University of California at Berkeley, Sanitary Engineering Research Laboratory (SERL), on the potential health impacts of the disposal of sludges containing tetraethyl lead (TEL).[3]

Section 25181 authorizes the Department of Health to request the district attorney or Attorney General to apply to the Superior Court for an order enjoining or directing compliance with their standards or requirements. However, no penalties are provided.[2]

TABLE 2

STATE STATUTES RELATED TO HAZARDOUS WASTE MANAGEMENT

STATUTE	ADMINISTERING AGENCY	DESCRIPTION
) Section 14040 and 13360 of the Porter-Cologne Water Quality Control Act and Subchapters 9.1, 15 and 23 of Chapter 3, Title 23, California Administrative Code	California Regional Water Quality Control Boards	Authorizes the setting and enforcement of waste discharge requirements for all disposal sites
) Hazardous Waste Control Act of 1972	California Department of Health	Authorizes the development of regulations governing the handling, processing and disposal of hazardous wastes
) Division 26 of the California Health Safety Code	Bay Area Air Pollution Control District	Authorizes the monitoring of landfill sites and the enforcement of regulations pertaining to the control of air-borne hazardous wastes
) Chapters 2 & 3, Division 7, Title 14 of the California Administrative Code	California Solid Waste Management Board	Authorizes the Board to coordinate solid waste management planning
) Section 5651 of the Fish and Game Code	California Dept. of Fish and Game	Authorizes the requirement of the screening of ponds containing hazardous wastes
) General Provisions of Divisions 1 and 2 of the Street and Highway Code	California Department of Transportation	Requires the Department to clean up spills of hazardous materials occurring on California roads
) Article 23 of Group 2, Subchapter 1, Chapter 4 of the California Administrative Code	Agricultural Commissioner's Office of each County	Specifies the requirements of the State Department of Food and Agriculture pertaining to pesticide safety programs

EPA has granted money to the State Department of Health for a surveillance and enforcement program so that disposal sites can be visited routinely and reports of illegal disposals can be followed up.[3]

c) Division 26 of the California Health and Safety Code

This act authorizes the Bay Area Air Pollution Control District to monitor land-fill sites and enforce regulations pertaining to the control of air-borne hazardous materials. The regulations and permit systems pertain to both evaporation from ponds and wind blown dusts and are contained in Regulations One and Eight of the District.

d) Chapters 2 & 3, Division 7, Title 14 of the California Administrative Code

This act authorizes the State Solid Waste Management Board to coordinate solid waste management planning, to determine the need for new disposal sites, to adopt minimum standards for solid waste handling and disposal, to provide input to the State Water Resources Control Board and the Regional Water Quality Control Boards in the setting of discharge requirements, and to provide technical assistance to entities involved in administering and operating sites.[2] Section 17562 specifies that hazardous wastes may be accepted at transfer/processing station only if specifically authorized by the Enforcement Agency. Section 17742 specifies minimum standards for sites accepting hazardous wastes by requiring that the site be approved for the particular waste involved and that precautions be taken to control air emissions.

e) Section 5651 of the Fish and Game Code

This act authorizes the California State Department of Fish and Game to require the screening of ponds containing hazardous wastes to protect fish and wildlife.[2]

f) General Provisions of Divisions 1 and 2 of the Street and Highway Code

This act requires the Department of Transportation to maintain California streets and roads. The District Maintenance Department of the Department of Transportation prepared a Hazardous Materials Spill Procedures Manual in 1975 and keeps a record of when and where spills occur on State roads.

g) Article 23 of Group 2, Subchapter 1, Chapter 4 of the California Administrative Code

This act specifies work practices for employees who handle agricultural pesticides. The Agricultural Commissioner's Office in each county enforces a pesticide education program as required by the State Department of Food and Agriculture.

References

1. Adapted from:
U.S. Environmental Protection Agency, 1974, Report to Congress - Disposal of Hazardous Wastes, U.S. Government Printing Office, Washington, D.C., pp. 15-20.

2. Adapted from:
Olivieri, Adam W., unpublished, California Regulation of Hazardous Wastes, pp.3,4.

3. Adapted from:
Storm, David L., unpublished Overview of California's Hazardous Waste Management Program presented at a National Conference About Hazardous Waste Management on February 1-4, 1977.

SW/Tech Memo 3 April 77
Deirdre Kostick
Yvonne San Jule

SOLID WASTE MANAGEMENT PLAN

ACTION PROGRAM TO REDUCE WASTE GENERATION AND TO PROMOTE SOURCE SEPARATION AND RECYCLING IN THE BAY AREA

TECHNICAL MEMORANDUM NO. 3
April 18, 1977

INTRODUCTION

This action program is part of the Solid Waste Management Plan-Municipal Wastes section. It presents recommendations for improvements in present solid waste management practices and mitigation methods to solve problems related to these current practices.

The emphasis is on the development of low-cost, community level programs for the Bay Area. (The State Solid Waste Management Board has been investigating large-scale resource recovery projects, and will make data available for EMP solid waste planning.) These programs are necessary for the short and medium period, and should provide more jobs, increase public awareness, and encourage public participation.

PROBLEM STATEMENT

The need for resource recovery and waste reduction is evidenced by problems related to current solid waste management practices. These are outlined below:

1. 40% of landfill site capacity in the Bay Region will be filled within ten years.

New disposal sites or disposal methods will have to be developed within the next ten years to reduce demands on landfill site capacity. Establishment of new sites will be costly and difficult because :

- o demands for land have increased,
- o public acceptance of nearby disposal sites is low, and
- o expansion of existing sites located on the bay shoreline will not be permitted.

2. Present solid waste management practices cause environmental problems:

- o impairment of air and water quality,
- o public health and safety, aesthetic and nuisance, and ecological effects and,
- o resource (land, energy and reusable materials) depletion.

3. Alternative regional solid waste management systems and their environmental, economic, amd social impacts have not been evaluated. The assessment of these alternatives is prerequisite to selection and implementation.

4. There are no stable markets for products of county and subregional source separation and resource recovery systems. This lack of stable secondary markets has been a major impediment to the implementation of resource recovery programs.

5. There is a need for coordination of efforts in solid waste management. Involved in solid waste management in the Bay Area are:

- o state, regional and local governments as regulatory agencies.
- o private collectors, recycling centers, and the secondary industries.

FINDINGS

The need for development of this action program is supported by the following findings.

Administrative

Neither county Solid Waste Management Plans nor the State Solid Waste Management Board has developed local programs that will reduce waste quantities or significantly increase resource recovery in the short-term or medium-term planning planning period (through 1990.)

The county plans and Solid Waste Management Board have recommended further studies of large-scale resource recovery projects. While these studies are necessary for the selection of appropriation resource recovery programs, they will require time. The loss of landfill site capacity in the Bay Area is an imminent problem.

Little consideration has been given to small-scale source separation programs.

Markets

There are no stable markets for products of county and subregional source separation and resource recovery systems.

Local governments and private collection companies are unwilling to start source separation projects until markets for secondary goods are guaranteed.

Data on the secondary markets in the Bay region is needed to:

- o assess quantities the secondary industries can absorb, and
- o develop methods to insure long-term markets.

Data are also needed which specifically apply to the type and quality of materials made available by source separation.

Public participation

The public is generally unaware of the problems associated with disposal of solid wastes and resource depletion.

The informed public has no significant opportunity to reduce waste generation or to increase materials recovery.

The success of a source separation program will depend on a substantial degree of public participation.

There is a need for coordination of efforts in implementing a source separation program. Besides the government agencies responsible for solid waste management, collection companies, secondary industries, public interest groups, and recycling centers, will have to be involved.

GOAL AND OBJECTIVES

The goal of this program is the mitigation of negative effects of solid waste management. To achieve this goal, the following objectives should be met:

- reduction of land used for solid wastes disposal,
- increased recovery and re-use of materials from the waste stream, and
- reduction of waste generation.

REGIONAL POLICIES AND ACTIVITIES

Land Use Policy

1. Reduce use of land for waste disposal.

Land Use Activities

1. Encourage investigation and implementation of alternative solid waste management programs which reduce demands on land.

2. Discourage establishment of new landfill sites when alternatives to disposal exist.

Physical Resources Policies

1. Recover and re-use maximum quantities of materials from waste stream.

2. Reduce depletion of virgin materials and energy supplies.

Physical Resources Activities

1. Encourage implementation of programs that reduce quantities of wastes generated and increased quantities of materials recovered.

2. Encourage research and development of methods for recovery and re-use of secondary materials.

Financial Policies

1. For short-term implementation, emphasize resource recovery programs with low capital requirements.

2. Establish dependable, long-term markets for recovered materials.

Activities

1. Establish low cost pilot source separation programs in the Bay Area with assistance of the State Board.

2. Advocate legislative and administrative changes that promote market stability.

3. Promote regional cooperation in the development of stable secondary markets.

Human Resources Policies

1. Implement resource recovery programs which provide jobs requiring non-technical skills.

2. Increase public awareness of problems associated with solid waste disposal and of alternatives to landfill disposal.

3. Implement programs which encourage substantial public participation.

Activities

1. Encourage local governments to implement source separation programs.

2. Provide public education materials on recycling.

3. Encourage local Boards of Education to include instruction on recycling as part of curriculum.

RECOMMENDED ABAG PROGRAM

LOCAL ASSISTANCE

Source Separation

1. ABAG in cooperation with private collectors, secondary industries, and recycling organizations, should assist local governments in establishing pilot separation programs. The programs should include:

   - o extensive public participation,
   - o public information and education,
   - o establishment of guaranteed markets for recovered materials,

- o careful record keeping of amounts and types of materials collected, reduction in waste volume, collection costs, participation.
- o variety of collection options/methods,
- o adequate period of time.

2. Prepare manual on source separation programs for use by local governments.

3. Assist local governments in contacting secondary industries and in developing contact systems.

4. Prepare public information packets on source separation and waste reduction.

5. Provide framework for regionwide cooperative efforts in developing source separation programs.

PLAN AND PROJECT REVIEW

Additional resource recovery programs

1. ABAG will assist local governments in determining the need for processing facilities. The following information on the facilities will be considered:

   - o economic study on the facility itself and on the markets for its products (specialized for area, including funding requirements),
   - o Environmental Impact Analysis (with a technical study), and
   - o compatability with source separation and waste reduction programs.

2. ABAG will review and comment on plans for these facilities. Criteria addressed in the review will include:

   - o environmental effects,
   - o energy requirements,
   - o economic and social effects,
   - o public acceptance, and
   - o health, safety, and nuisance effects.

ADVOCACY

1. ABAG will advocate local, state and federal legislative and administrative changes to support market stability and waste reduction.

2. ABAG will support local, state and federal funding for implementation of appropriate resource recovery programs in Bay Area.

POLICY RECOMMENDATIONS FOR LOCAL GOVERNMENTS

ABAG should encourage local governments to adopt the following policies on resource recovery:

- o Implement programs that reduce quantities of wastes generated and recover maximum quantities of reusable materials through increased public awareness and knowledge.
- o Encourage research and development of methods for recovery and use for secondary materials.
- o Recognize the need for regional cooperation to develop secondary markets.

RECOMMENDED ACTIVITIES FOR LOCAL GOVERNMENTS

1. Residential source separation.
   Local governments should develop permanent source separation programs based on the results of the pilot programs.

2. Office source separation

   A. Governments offices should develop and begin source separation of wastes, particularly paper.

      - o These programs should be coordinated to eliminate possible competition for waste paper purchasers.
      - o Separation of waste papers at the employee's desk should be encouraged.
      - o Custodial staff should be trained to properly handle separated wastes.

   B. These government programs should be used as models for development of office and institutional source separation programs.

      1. Local governments should provide information and assistance to public based on the results of the model programs.

   C. Local governments should change administrative practices to require purchase of secondary materials where possible.

      1. Local governments should use 100% recycled paper for public correspondence.

   D. Waste generation in offices should be reduced by:

      - o Using both sides of paper,and
      - o Eliminating unnecessary forms, memos, correspondence, or publications.

3. Markets for secondary materials.

To improve markets for secondary materials local governments should:

- o adopt preferential purchasing policies under which the required percentage of recycled fiber in paper products and other materials is steadily increased,
- o support tax benefits or direct grants to reduce the cost of secondary materials,
- o support surtaxes or disposal charges on prices of virgin materials,
- o support tax law changes to eliminate favored status of virgin materials, and
- o develop a system of contracts to insure minimum prices for recovered materials.

4. School

A. Schools should start source separation programs, particularly for paper.

1. Local governments should encourage local Boards of Education to promote and start source separation programs, and to adopt preferential purchasing policies.

2. Countywide solid waste planning should include educational/technical assistance programs to aid schools and provide training for custodial staff.

B. School Boards should adopt policies encouraging participation in existing resource recovery programs (i.e Bay Area Creative Recycling, SCRAP).

SW Tech Memo 4/April 1977
Linda Bledsoe

ASSOCIATION OF BAY AREA GOVERNMENTS
ABAG

ENVIRONMENTAL MANAGEMENT PROGRAM

SOLID WASTE MANAGEMENT PLAN

ISSUES IN CURRENT PERMIT APPROVAL SYSTEM FOR SOLID WASTE MANAGEMENT FACILITIES AND DISPOSAL SITES

TECHNICAL MEMORANDUM NO. 4
April 27, 1977

Introduction

Under the Municipal Wastes section of the EMP Solid Waste Management Planning Program one task is to develop a coordinated permit approval process for solid waste management facilities and disposal sites. Issues in the permit approval process fall into two general categories: 1) duplicated activities, and 2) ambiguous requirements. These are described below. Once the problem areas are recognized, solutions can be suggested to streamline the permit process. While several approaches are possible, the focus under the solid waste management planning for EMP is on coordinating permit procedures.

Previously, ABAG staff developed a list of issues related to the permit approval process (memo dated January 18, 1977). These issues apply generally to governmental permit processing whenever more than one agency is involved. Another step in identifying specific problem areas was to determine the agencies with regulatory authority and those that are consistently requested to review permit applications.

Certain types of problems begin to emerge as more significant in preventing the smooth processing of new or expanding solid waste facilities. They tend to impede the efficiency of review and decision-making and to decrease the likelihood of a fair appraisal of the proposal. In addition, lack of coordination may make it harder to improve the quality of development proposals.

Below are presented discussions of issues related to approval of solid waste management facilities and disposal sites. Work done previously in the subject area has been very helpful in categorizing the problems and determining potential solutions. BCDC's excellent report called The Regulation of Dredging was very useful for recognizing permit problems and solutions, particularly since they dealt with the Bay Area institutions. The Urban Land Institute report The Permit Explosion presented experiences in permit coordination in California and elsewhere in the U.S. This report suggested both coordinative techniques that could be implemented within the existing institutional framework as well as more far-reaching changes involving new legislation and new authorities.

Issues in Permit Approval Process

Issues listed in the January memorandum fall into two general categories (This categorization is taken from the BCDC Regulation of Dredging report):

1) Duplicated activities, and

2) Ambiguous requirements

1. Duplicated activities

These are procedures that are repeated during the processing of one application.

A. Multiplicity of Agencies

For most solid waste management facilities the minimum number of regulatory agencies involved in issuing permits will be two. The local general purpose agency will always require a land use permit. Regional, State, and Federal agencies will have authority, depending on the type of facility and location. There may be as many as seven approvals required before construction and operation. Numerous agencies will be asked for comments as well.

B. Duplication of Reviews

This becomes a problem with solid waste facilities when two or more agencies have comparable regulatory authority. Duplicate land use reviews are possible if the proposed activities are located in the jurisdiction of BCDC, Coastal Commission, Corps of Engineers, or State Lands Commission. The local agency will also be performing a land use review. Water quality and air quality reviews are less likely to overlap.

New solid waste facilities will undoubtedly involve environmental impacts. It is likely that an environmental impact report (EIR) will be required under CEQA. If an environmental impact statement (EIS) is also required under NEPA, duplication of review for environmental effects could occur.

C. Duplication of Procedural Steps

Procedures that individual agencies follow may be duplicated by other agencies processing the same application. Several of the agencies regulating solid waste facilities routinely notify other agencies and solicit comments. Each regulatory agency has established internal procedures for processing

that are tailored to agency objectives, legislative authority, staff expertise, and decision-making body. An applicant may encounter many different modes of operation that add to the confusion. The application forms alone reflect individual agency information needs. Frequently there are overlaps in these needs and at least portions of the form could be standardized.

Most agencies will at some point require a public hearing if a facility is not deemed administrative in nature. Possibly several different hearings will be held on one application requiring considerable time and effort on the part of an applicant, the agencies involved, and the public.

2.) Ambiguous Requirements

One of the most troublesome problems from an applicant's point of view is unclear requirements. This ambiguity may occur either with the administrative requirements or with the agency's criteria for evaluation.

A. Length of Time To Process Applications

There is no way to accurately predict how long the complete process will take. Some agencies have no definite processing time schedule. Others may have deadlines but there are no sanctions to ensure that they will abide by them. BCDC, on the other hand, has a time limit which if exceeded means the permit is automatically granted by law. Commenting agencies usually have no deadlines.

Some agencies such as Regional Water Quality Control Board and the Coastal Commission will not process permits concurrently with local agencies, but wait for local agency approval. The Corps of Engineers waits for all other local, regional, and State agency approvals before processing applications.

B. Guidance and Consistency of Agency Evaluations

The ambiguity of agencies' policies, plans, and decision-making criteria apparently is one of the most significant problems for solid waste facility applicants. Not all agencies regulating solid waste management facilities have specific policies on solid waste management or criteria for decision-making. This lack of guidance makes it difficult for the applicant to anticipate the requirements and for the agency to make consistent, clear decisions.

The Regional Water Quality Control Board has specific policies and regulations on disposal sites. The Bay Area Air Pollution Control District has quite specific standards for air emissions. BCDC and the Coastal Commission have extensive bodies of policy and clear objectives for particular resources but have only very limited references to solid waste facilities. The Corps of Engineers and State Lands Commission have no plans or policies. Decisions are based on their general mandates and, in the case of the Corps, their regulations. Counties have each prepared solid waste management plans that provide some guidance in making decisions about proposed new solid waste facilities.

Possible Elements in Coordinated Permit Approval Process

According to the Urban Land Institute report The Permit Explosion there are four general approaches to coordinating the permit process.

1. Strengthening regional agencies.

2 Coordinating permit procedures.

3. Reducing the number of levels of government involved in permitting.

4. Establishing specialized appellate review of permit decisions.

Approaches 1, 3, and 4 are beyond the scope of the EMP Solid Waste Management Plan Program. The second approach, however, offers concrete suggestions that can be accomplished within the existing institutional arrangements.

The following is a shopping list of possible elements in a coordinated permit approval process for solid waste management facilities and disposal sites. They will have to be tailored and combined in the way that best suits facilities associated with solid waste management. (These are recommendations made in the Urban Land Institute Study.)

1. Permit Register--Compile and make available a master list of all solid waste related permits required by relevant agencies.

2. Master Application--Develop a master application for all involved agencies to use. Appendices to the master application can be used for unique information needs.

3. Joint Hearing Administrator--Designate one agency to administer a coordinated hearing process. One agency would be responsible for details of permit register, processing master application, sending out notices, scheduling hearings.

4. Optional Local Agency Participation--A local agency could have the choice of participating in a coordinated hearing process.

5. Informal Pre-hearing Public Meetings--To facilitate understanding of the proposed solid waste facility and identify possible controversy. Must be well publicized.

6. Environmental Impact Report/Environmental Impact Statement--Make draft available to all relevant agencies and public before hearing, with comments due prior to the hearing.

7. Hearing Record--Creation of a complete and common hearing record from proceedings of a joint hearing making it available to all relevant permitting agencies. This will help agencies better understand implications of the proposal and its inconsistencies with agencies' policies or programs.

8. Hearing Location--Hearing near area of proposed facility.

9. Time Limit for Decisions--Reasonable deadlines should be established for public agency response to permit applications.

10. Individual Agency Decisions--An agency should base its decision on the common hearing record as well as its own policies and regulations.

In addition, individual agencies can take steps to solve some of the above described problems. Following are some suggestions:

1. Adopt or clarify regulations to formalize procedures used in processing of or commenting on applications. Include criteria for differentiating administrative items from ones requiring submission to policy body; time limits requirements for completing, filing, and processing an application; procedures for solicitation of comments, public notification, hearings, issuance of permit documents; appeal mechanisms and procedures.

2. Adopt substantive policies and standards to establish criteria for decision-making.

SW/Tech Memo 5/May 77
Revised June 13, 1977
Jeanne Perkins
Peter Chiu

SOLID WASTE MANAGEMENT PLAN

EXISTING PRACTICES FOR HAZARDOUS WASTE MANAGEMENT

IN THE SAN FRANCISCO BAY AREA

TECHNICAL MEMORANDUM NO. 5

June 13, 1977

Introduction

This technical memorandum describes the existing practices for hazardous waste management in the San Francisco Bay Area *. In general, hazardous wastes can be chemical or biological in origin. The hazardous waste management system consists of four components: (1) generation and storage; (2) transportation, including collection and transfer; (3) disposal; and (4) processing ,including resource recovery. It should be noted that processing and resource recovery can be part of the first three components.

In the following sections, existing management practices for hazardous wastes produced by industries, agricultural activities, and hospitals will be described. Major findings include:

- Hazardous industrial wastes may be a by-product of a production process or may result from production malfunctions or transport accidents.
- Industries that produce a large amount of any given waste may be able to use it as a raw material in other manufacturing processes or sell it to another company for its reuse.
- Because of poor housekeeping or because most older plants have a common sewer line, industrial wastes are often mixed, and cannot be reclaimed or reused readily.
- The two most common industrial waste materials reclaimed for reuse are oil and solvent.
- Most industrial wastes that cannot be reused are disposed of on-site or are hauled in vacuum trucks by registered haulers to one of the three Class I disposal sites in the region.
- A limited degree of waste treatment and recovery usually occurs at the Class I sites prior to disposal.
- Hazardous agricultural wastes consist mainly of pesticide containers and residual chemicals. Most pesticide containers are reused, triple rinsed and disposed of at a Class II site, or taken to a Class I site outside the Bay Area.

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* For definitions of hazardous wastes, see Solid Waste Technical Memorandum No. 2, April, 1977.

- Most hazardous hospital wastes are rendered non-hazardous before they leave the hospital. Infectious and pathological wastes are sterilized and incinerated, respectively, while disposable hypodermic syringes are crushed.

I. INDUSTRIAL WASTES

A. Waste generation and storage

Hazardous industrial wastes may be a by-product of a production process or may result from production malfunctions or spills in transport.

According to the Contra Costa county solid waste management plans, most producers of large amounts of hazardous wastes take adequate precautions to protect their employees and public health as specified by the Occupational Safety and Health Act of 1970 (OSHA), although practices vary and are sometimes inadequate.

Most of the wastes are in liquid form. Tanks with a storage capacity of several days and facilities for transferring the wastes to tanks trucks are usually provided. In addition, industries that produce a large amount of any given wastes may be able to use it as a raw material in other manufacturing processess or sell it to another company for its reuse. However, it many cases, because of poor housekeeping, wastes are mixed and cannot be reused or reclaimed readily.

Smaller producers of hazardous wastes are more likely to create dangerous conditions. For example, wastes may be stored in 55-gallon drums that are not designed for such a purpose. Waste also may be stored for extended periods of time since the quantity needs to be large enough to make up a truckload.

B. Transportation

Transport of the wastes is usually handled through a contract with one of the liquid waste haulers in the region. Such haulers have to be registered by the State. There are over 600 haulers in California. The largest hauler in northern California is Industrial Trucking, Inc., a subsidiary of Industrial Tank, Inc. Some wastes are transported with in-house personnel and equipment.

Firms use ordinary steel vacuum trucks for transporting bulk non-corrosive liquids. By using a compressor, they are able to pump heavy sludges, and then bt pressuring the tank, discharge these materials. For some corrosive materials, stainless steel vacuum trucks are needed. For others, specially lined non-vacuum trucks are needed. These trucks require special pumps. The ratio of vacuum trucks to steel or lined trucks is approximately 5 to 1. Flat bed trucks with side guards are used for transporting containerized materials. Mechanical loading is preferred for safety reasons.

Before the wastes can be transported on a public road, a Liquid Waste Haulers Form, or manifest, developed by the State Department of Health and the State Water Resources Control Board, must be filled out by the producer and the

hauler. The producer lists the types of wastes that are to be hauled and the hauler then signs the form along with his license number for transporting wastes. Copies of the forms must be mailed to the State, where they are coded and entered in the computerized system of the State Department of Health. Figure I is a copy of the manifest.

The U.S. Department of Transportation also requires that the materials be properly labeled. According to one of its staff, the agency currently has adequate personnel for following up complaints and for spot checking.

Collected waste is usually transported directly to a Class I site in the east Bay Area. Some are transported to a transfer station in San Jose near Milpitas, however. The average cost of transporting wastes is 50 cents per minute.

The transfer station, Industrial Environmental Services, is operated jointly by Oscar E. Erickson, Inc. and Industrial Tank, Inc. The station allows larger quantities of materials to be accumulated and wastes to be trucked the remaining distance to the Class I sites in larger capacity trucks that are less costly to operate. (The average capacity of trucks arriving at the station is 1,000 gallons, while the average size of those leaving is 5,000 gallons.) The station has operating permits from the City of San Jose, the Regional Water Quality Control Board, the Bay Area Air Pollution Control District, and the City Fire Department.

The California Department of Transportation has records of 100 spills involving hazardous materials in Bay Area counties from July 1973 to June 1976. Table I summarizes these spills by county. Water quality problems associated with these spills and clean-up practices are discussed in a special study, A Survey of Preventive Measures and Contingency Plans for Oil and Chemical Spills (ABAG-EMP, in press).

TABLE I: HAZARDOUS SPILLS

	7-73 to 6-74	7-74 to 6-75	7-75 to 6-76
Alameda	15	12	15
Contra Costa	5	8	14
Marin	2	1	0
Napa	1	0	0
San Francisco	0	1	1
San Mateo	3	0	4
Santa Clara	3	2	5
Solano	2	1	1
Sonoma	2	0	2

C. Disposal

Most hazardous wastes generated in the Bay Area are eventually disposed of on-site or at one of the three Class I sites in the region. The site operator is required to sign the manifest and send an additional copy to the State.

Revised December 1975

Figure 1 - **CALIFORNIA LIQUID WASTE HAULER RECORD**

STATE WATER RESOURCES CONTROL BOARD
STATE DEPARTMENT OF HEALTH

PRODUCER OF WASTE (Must be filled by producer)

Name (print or type): _____ Code No. ☐☐☐☐☐☐

Pick up Address: _____ (Number) (Street) (City)

Telephone Number: (___) _____ P.O. or Contract No.: _____

Order Placed By: _____ Date: _____

Type of Process which Produced Wastes: _____ ☐☐☐☐

(Examples: metal plating, equipment cleaning, oil drilling, wastewater treatment, pickling bath, petroleum refining) --Code No.

DESCRIPTION OF WASTE (Must be filled by producer)

Check type of wastes:

1. ☐ Acid solution
2. ☐ Alkaline solution
3. ☐ Pesticides
4. ☐ Paint sludge
5. ☐ Solvent
6. ☐ Tetraethyl lead sludge
7. ☐ Chemical toilet wastes
8. ☐ Tank bottom sediment
9. ☐ Oil
10. ☐ Drilling mud
11. ☐ Contaminated soil and sand
12. ☐ Cannery waste
13. ☐ Latex waste
14. ☐ Mud and water
15. ☐ Brine

(List) ☐ Other (Specify) _____ Code No. ☐☐☐

Components:
(Examples: Hydrochloric acid, lime, caustic soda, phenolics, solvents (list), metals (list), organics (list), cyanide)

	Concentration: Upper	Lower	%	ppm
1. _____	___	___	☐	☐
2. _____	___	___	☐	☐
3. _____	___	___	☐	☐
4. _____	___	___	☐	☐
5. _____	___	___	☐	☐
6. _____	___	___	☐	☐

Hazardous Properties of Waste:
pH _____ ☐ none ☐ toxic ☐ flammable ☐ corrosive ☐ explosive

Bulk Volume: _____ ☐ gal ☐ tons ☐ barrels (42 gal)* ☐ other _____ (specify)

Containers: _____ (Number) ☐ drums ☐ cartons ☐ bags ☐ other _____ (specify)

Physical State: ☐ solid ☐ liquid ☐ sludge ☐ other _____ (specify)

Special Handling Instructions (if any): _____

The waste is described to the best of my ability and it was delivered to a licensed liquid waste hauler (if applicable).

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

_____
Signature of authorized agent and title

HAULER OF WASTE (Must be filled by hauler)

Name (print or type): _____ Code No. ☐☐☐

Business Address: _____ (Number) (Street) (City)

Telephone Number: (___) _____ Pick Up: _____ (Date) Time: ___:___ ☐AM ☐PM

State Liquid Waste Hauler's Registration No. (if applicable): _____

Job No.: _____ No. of Loads or Trips: _____ Unit No.: _____

Vehicle: ☐ vacuum truck ___ barrels, ☐ flatbed, ☐ other _____ (specify)

The described waste was hauled by me to the disposal facility named below and was accepted.

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

_____
Signature of authorized agent and title

DISPOSER OF WASTE (Must be filled by disposer)

Name (print or type): _____ Code No. ☐☐☐

Site Address: _____

The hauler above delivered the described waste to this disposal facility and it was an acceptable material under the terms of RWQCB requirements, State Department of Health regulations, and local restrictions.

Quantity measured at site (if applicable): _____ State fee (if any): _____

Handling Method(s):

☐ recovery

☐ treatment (specify): _____ (Examples: incineration, neutralization, precipitation) --Code No. ☐☐

☐ disposal (specify): ☐ pond ☐ spreading ☐ landfill ☐ injection well ☐ other (specify): _____ Code No. ☐☐

If waste is held for disposal elsewhere specify final location: _____

Disposal Date: _____

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

_____
Signature of authorized agent and title

The site operator shall submit a legible copy of each completed Record to the State Department of Health with monthly fee reports.

FOR INFORMATION RELATED TO SPILLS OR OTHER EMERGENCIES INVOLVING HAZARDOUS WASTE OR OTHER MATERIALS CALL (800) 424-9300.

Some wastes are illegally disposed of to sewers in the region. Most of these problems may be due to the smaller producers being unaware that such disposal is illegal. Some also believe that these wastes may be illegally dumped by some of the smaller liquid waste haulers. One of the reasons for development of the manifest system described earlier was to allow the Department of Transportation to identify loads which never reach a hazardous waste site through checking manifest records and thereby minimize illegal disposal.

There are three Class I sites in the region. Two are in Contra Costa County, one near Richmond and a second near Martinez. A third site is near Benicia in Solona County. Each site will be described in turn.

(1) Martinez Site

Sierra Reclamation and Disposal, Inc., a subsidiary of Industrial Tank, Inc., owns this 150 acre site in Contra Costa County. It is operated by Pacific Disposal Systems, Inc., another subsidiary of Industrial Tank, Inc. The management of the site believe that pre-treatment is best accomplished at the disposal site since disposal is relatively simple should treatment fail. (Processing equipment down time at SRD, as with most hazardous waste processing plants, is higher than with single process plants because of the large number of materials being processed). Figure 2 illustrates how the processes that are used at the site are interrelated.

a) Laboratory - This laboratory has been approved by the California Department of Public Health. It is used for chemical analyses so that the wastes can be safely handled during reclamation and disposal. Waste samples from the top and bottom of the tank trucks can be analyzed after they have reached the disposal site. When possible, it is preferred that preliminary analyses be performed prior to collection to increase the safety of hauling the materials.

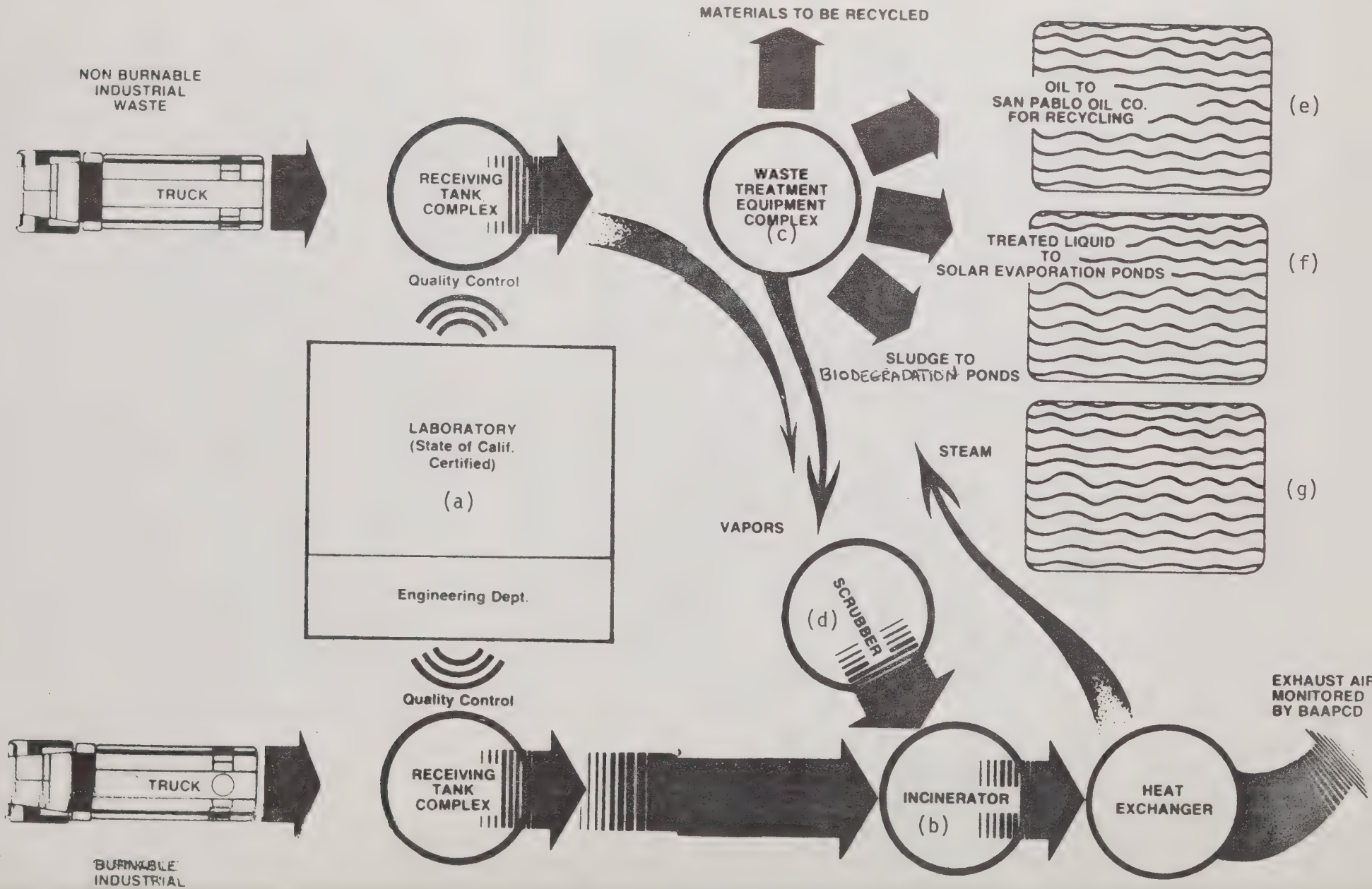
b) Incinerator - The burnable industrial waste is burned in two incinerators. The largest one burns 4,000 gallons/day and generates enough steam to run the solvent/solids separation unit described under (c) below.

c) Waste Treatment Equipment Complex - This complex includes a nitric hydrofluoric acid neutralization unit, a solvent/solids unit, and chlorine and hydrogen peroxide oxidation units. The neutralization unit neutralizes nitric and hydrofluoric acids with calcium carbonate. The calcium flouride and calcium nitrate residues will be buried in landfill area of the Benicia site. A scrubber eliminates acidic vapor emissions during processing. The solvent/solid unit uses the steam generated during incineration (b) to strip out the solvent. The solvent can then be reused or incinerated and the solids buried. The oxidation units add chlorine and hydrogen peroxide to odorous compounds, such as sulfides and mercaptans, to oxidize them. The chlorine unit has been modified to handle cyanide destruction.

d) Scrubber - Caustic scrubbers remove materials that burn incompletely or that do not oxidixe at all from the wastes before they are incinerated.

Figure 2 - TREATMENT PLANT COMPLEX SCHEMATIC

SIERRA RECLAMATION AND DISPOSAL, INC.



e) Oil Reclamation. An oil separation unit allows San Pablo Oil Co., a third subsidiary of Industrial Tank, Inc., to reclaim the recovered oil.

f) Solar Evaporation Ponds. The treated liquid is placed in ponds where the waste water evaporates. This process is ideal for the Bay Area since evaporation normally exceeds rainfall. After the water evaporates, the impurities--as salts--will be collected and buried at the Benicia site.

g) Biodegradation Areas. Highly organic material from refineries is decomposed by aerobic micro-organisms. A special bulldozer and disc blend the incoming materials into the soil.

h) Landfill. Limited amounts of materials are buried. Because of the small amount of land available for this purpose, the materials that are buried are usually the product of the processes decribed earlier.

It was estimated by both the State of California and the site operator that the remaining life of the site is more than 20 years.

(2) Benicia Site

Pacific Reclamation and Disposal, Inc., also a subsidiary of Industrial Tank, Inc., owns this 281 acre site in Solano County. It is also operated by Pacific Disposal Systems, Inc.

a) Acid Neutralization. One pond receives dilute acidic fluids. As solar evaporation occurs, limestone is added so that the acid strength does not increase to the point where acid emissions occur in excess of the Bay Area Air Pollution Control District standards.

b) Oil Recovery. Limited amounts of oil and water mixtures are received at the disposal site. The oil floats to the top at a pond designated for gravity separation. The oil is skimmed from the surface and reclaimed by the San Pablo Oil Recovery Co. The remaining water is transferred to lower ponds.

c) Caustic Ponds. Four ponds receive caustic liquid from the Bay Area refineries. These ponds also are subject to solar evaporation. Lime sludge is also received from Bay Area refineries. It is placed in three of these ponds.

d) Sludge Drying Beds. These beds receive rotary drilling fluid or clay waste. The material is spread on sludge drying beds for solar evaporation and solidification.

e) Solid Disposal. Unlike the Martinez site, large amounts of containerized wastes are deposited and buried on the site. Disposal occurs by placing materials in double containers in trenches. The containers are covered daily. When the trench has been completely filled, additional dirt is placed on top of the trench and a new one is dug. Materials buried in each cell are recorded and monitoring wells are constructed for the buried cells.

It was estimated by both the State of California and the site operator that the remaining life of the site is more than 25 years.

(3) Richmond Site

The West Contra Costa County Landfill is a 350 acre Class II-2 and I site operated by the Richmond Sanitary Service. The site was temporarily closed in early 1977 due to a lack of freeboard on the pond since it had reached its capacity. The site has been reopened on a limited basis. The pond for hazardous fluids has been converted into two sections, the first for solar evaporation and the second for storage of oil wastes that are skimmed off the first pond. Oily wastes are no longer allowed to accumulate in the first pond. The owners are currently looking for a market for this oil. Containerized materials are accepted for burial.

The site operator estimated that the remaining life of the site is indefinite.

The State Department of Health regulates the disposal of hazardous materials. In 1974, with a grant from EPA, the Department hired five staff members to start a laboratory support program for analysis and characterization of hazardous wastes, and to develop detailed regulations. In 1975, EPA funded "five field inspectors to start a surveillance and enforcement program so that disposal sites could be visited routinely" and reports of illegal disposals could be followed up (Storm, 1977). In 1976, the Department "received a research grant from EPA to begin the first part of a series of studies to develop sampling and analysis techniques for hazardous wastes and to develop guideline lists of incompatible wastes" (Storm, 1977). That same year, it completed a cooperative study on the potential health impacts of disposing of sludges containing tetraethyl lead, implemented new regulations, and made a serious effort to get underway a statewide survey of industries to determine the amount and type of hazardous waste produced. By 1977, the Department has assembled a multidisciplinary staff of 25 professionals, including chemical and sanitary engineers, geologists, chemists, biologists, industrial hygienists, and biochemists. "Staff (canvass) the State, visiting landfills and plants, gathering data, providing information, and enforcing regulations... chemists in the labs (analyze) samples of wastes and conduct research to back up field staff. And in the offices,... industrial hygienists, engineers, and chemists... evaluate waste properties and develop automated methods to handle the mountains of data received on waste handling practices across the state" (Storm, 1977).

D. Resource Recovery

The two main hazardous materials currently reclaimed are oil and solvent.

(1) Oil Recovery

Oil accumulated at the Class I sites in Benicia and Martinez is reclaimed by San Pablo Oil Company, Inc., a subsidiary of Industrial Tank. Much oil recovery also occurs before oil reaches these sites, however, The Economy Oil Company and the Fabian Oil Company, both in Oakland, each pick up used oil from service stations in the north Bay Area, including eastern Marin,

and the Santa Rosa, Petaluma, Napa and Vallejo areas. Both companies re-refine the used oil for use as road, motor or fuel oil. Other companies periodically collect used oil that is accumulated in service stations in the remainder of the Bay Area.

(2) Solvent Recovery

Romic Chemical Company in East Palo Alto operates the largest solvent reclamation and recovery business in the Bay Area. About 1.5 million gallons of solvent are reclaimed annually. Flammable solvents are reclaimed, as well as chlorinated and fluorinated ones. Romic's customers include paint companies, tape manufacturers, other electronics firms, and industrial coating companies. The paint companies are providing less of the solvent as water-base paints become more popular. Electronics companies should be the source of most future business. Eighty percent of the reclaimed solvent is resold back to the people it is bought from. Figure 3 illustrates the process that is used. The plant uses batch processing because of the large number of separate products it produces.

As shown on page 5, SRD also has a solvent recovery unit associated with its waste process unit that recovers about ½ million gallons of solvent annually.

Solvent Services Co, in San Jose, has a similar, though smaller, operation. It specializes in chlorinated solvents, kerosene, and acetone. Most of its customers are paint companies, electronics or semi-conductor firms, and industries that use the less volatile solvents for coatings.

Van, Water and Rogers and Baron-Blakeslee, in San Jose and Newark, respectively, are relatively new companies in this field. Van, Water and Rogers has specialized in chlorinated solvents, and Baron-Blakeslee in chlorinated and flourinated solvents. Their customers are industrial and electronics companies. Because their solvents are limited, they use simple distillation rather than true fractionation.

A few companies operate solvent recovery processes in their plants. For example, a tannery in Napa County reclaims the processing solvent for re-use. This practice is more difficult than one might expect because of the equipment involved and the need to produce an effluent water that can be discharged to sewers.

The existing firms could accommodate more customers. The main problem in getting more customers is convincing them that reusing solvent is less expensive than paying for disposal at a Class I disposal site plus paying for new solvent. The only change in existing practices that producers would need to make is to store different used solvents in separate drums. This housekeeping measure reduces the cost of reclamation and ensures that the solvents are of acceptable purity when reclaimed.

Some of the companies that still dispose of their solvents find reclamation difficult due to the cost of specialized equipment for reclamation.

(3) Other Recovery Operations

Other relatively common resource recovery programs in industry are the regeneration of activated carbon used for both water and air filtration treatment processes, the reuse of pickling liquors used in rust-removal processes , and the recovery of sulfuric acid from sludge acid. (Sulfuric acid is used as a catalyst in refining oil.) These recovery operations may be accomplished within a plant

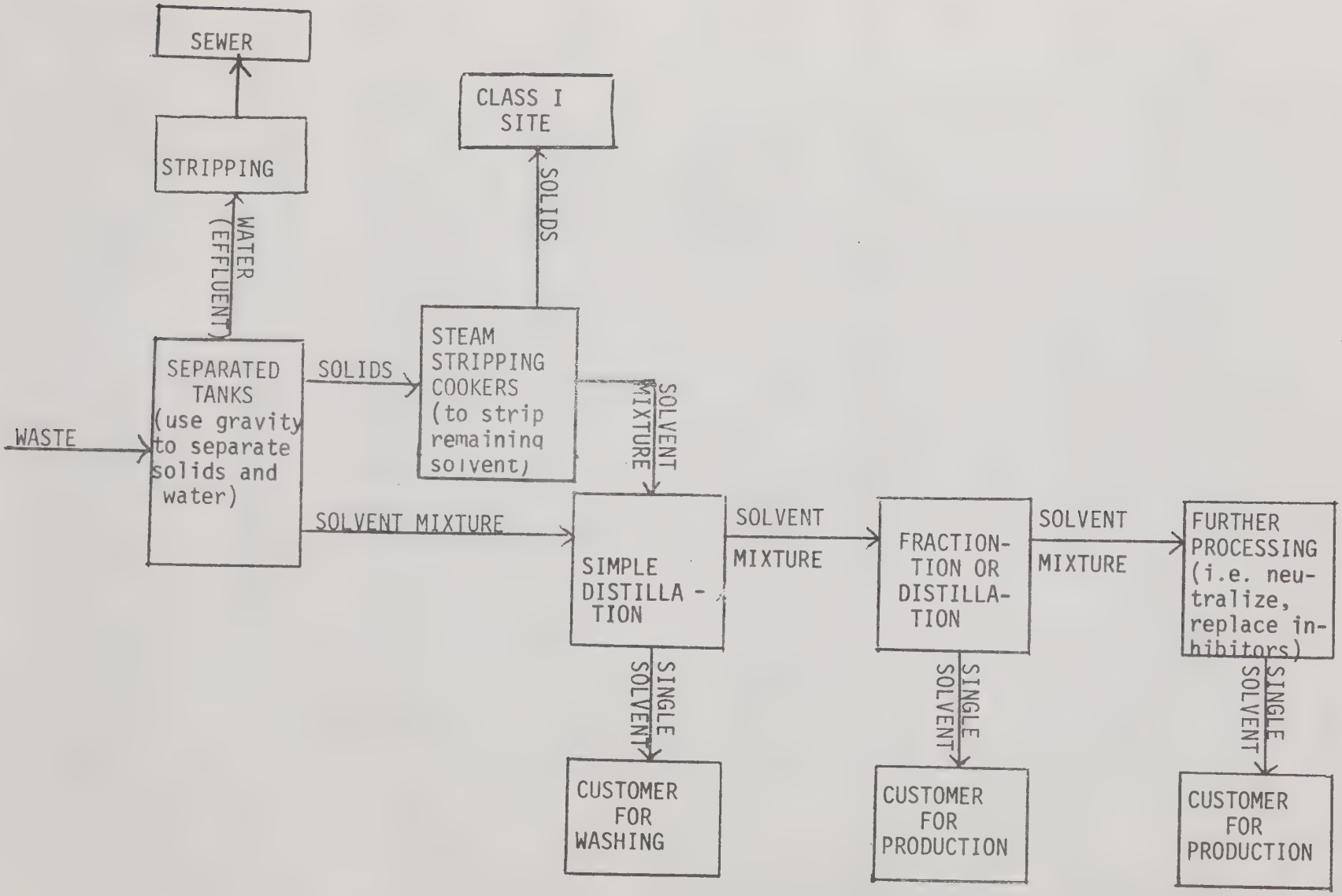


Figure 3 - SOLVENT RECOVERY PROCESS

or may be done under contract with another company specializing in the process.

Zero Waste Sytems, Inc. in Oakland, specializes in recycling of industrial wastes. The firm purchases, or removes at no charge, a variety of surplus or waste materials. Examples of such materials include lab chemicals, surplus chemicals, reactive metals, chlorinated solvents, and organic solvents. Waste collected by the firm will be stored or marketed for reuse. The firm also provides consulting services to industries to design marketable by-products.

II. AGRICULTURAL WASTES

A. Waste generation and storage

Hazardous agricultural wastes consist of pesticide containers and the residual chemicals. Large numbers of pesticide containers are usually accumulated before eventual disposal. This practice is actively discouraged by the Agricultural Commissioner's office in each of the counties through an educational program on pesticide safety required by the State Department of Food and Agriculture.

B. Transport

The accumulated containers are eventually trucked to a Class I site by the users themselves. At least one company that supplies pesticides provides collection and transport to a Class I site as a service to its customers.

C. Disposal

The larger 30-gallon and 55-gallon pesticide drums are reused. Paper containers are either burned on site or taken to a Class I site. Burning is subject to air pollution and health regulations.

Most smaller 5-gallon containers are triple-rinsed on site and then may be deposited at a Class II-I landfill.

Some agri-chemical containers are deposited at the Benicia site described earlier. The Central site in Sonoma County is classified as a Class II-I site and is able to accept specified agri-chemicals subject to approval of the local Regional Water Quality Control Board and the County Health Officer. No such disposal has occurred to date. Most pesticide containers are hauled to the Big Blue Hills Disposal Site, a Class I site operated by the Fresno County Department of Public Works.

III. HOSPITAL WASTES

A. Waste generation and storage

Some hazardous hospital wastes are rendered non-hazardous before they leave the hospital. Some infectious and pathological wastes are sterilized and incinerated respectively while some disposable hypodermic syringes are crushed.

B. Transport

Certain hospital wastes may be transported in sealed containers that are specially marked.

C. Disposal

These specially-marked containers can go to non-Class I sites. Other hospital wastes including some pathological and infectious wastes are disposed of within the general waste stream. Patient and food wastes enter the sewer system.

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SW/Tech Memo 6 /June 1977
Jeanne Perkins
Peter Chiu

SOLID WASTE MANAGEMENT PLAN

CURRENT AND PROJECTED QUANTITIES

OF HAZARDOUS INDUSTRIAL WASTES PRODUCED

IN THE SAN FRANCISCO BAY AREA

TECHNICAL MEMORANDUM NO. 6
June 13, 1977

I. SUMMARY

Current and projected quantities of hazardous industrial wastes produced in the San Francisco Bay Area are presented in this technical memorandum. These figures should be considered as rough estimates. There has been very little systematic collection of information about the characteristics and exact amounts of wastes being generated. Current waste quantities are estimated on the basis of:

- Statistics summary obtained from the State Department of Health computerized manifest system,
- Results of a survey of on-site disposal conducted by the State Department of Health,
- Results of a survey of hazardous industrial wastes in Alameda County conducted by the County Planning Department, and
- Available information on amounts of wastes recovered.

Future waste quantities were estimated after examining the following factors:

- Production and consumption rates of manufacturing goods
- Federal and state pollution control requirements
- Legislative incentives and discentives

Major conclusions on the amount of wastes being generated include:

- Accurate estimates of hazardous industrial waste quantities cannot be made because of present data limitations.

- A more refined data base has to be developed in order to project Class I site needs and to facilitate hazardous waste management efforts, such as reclamation.

- Within the data limitations, the total quantity of hazardous industrial wastes produced in the Bay Area in 1976 is estimated to be roughly 860,000 tons.

- It is estimated that the production of hazardous industrial wastes will increase about 5% annually. The range of increases could vary from 2 to 11%.

- Based on the estimated 1976 waste quantity and an annual rate of increase of 5%, 1985 waste generation is estimated to be 1.3 million tons.

It should be noted that the Federal Resource Conservation and Recovery Act of 1976 requires the generators of the hazardous wastes to adopt housekeeping practices that accurately identify the quantities of wastes generated. The Act further requires the owners and operators of hazardous waste treatment, storage, and disposal facilities to maintain records of all hazardous wastes being handled by the facilities. These requirements will be implemented within the next two years. In the interim, county-by-county surveys will be necessary in order to develop better estimates of hazardous waste quantities being generated.

II. CURRENT QUANTITIES OF HAZARDOUS INDUSTRIAL WASTES

The quantities of hazardous industrial wastes produced in the Bay Area in 1976 are estimated to be 860,000 tons. This amount is based on the following estimates:

- Wastes being disposed of at Class I sites- 376,700 tons
- Wastes being disposed of on-site - 461,600 tons
- Wastes being recovered - 9,100 tons
- Waste being disposed of by other methods - 11,300 tons

Methods of making the above estimates are discussed in the following sections.

A. Wastes being disposed of at Class I sites

It is relatively simple to estimate the amounts of wastes being disposed of at Class I sites. The California Department of Health computerized manifest system provides the detailed information. Before the wastes can be transported on a public road, a Liquid Waste Haulers Form, or manifest, developed by the State Department of Health and the State Water Resources Control Board, must be filled out by the producer and the hauler. The producer lists the types of wastes that are to be hauled and the hauler then signs the form along with his license number for transporting wastes. Copies of the forms must be mailed to the State, where they are coded and

entered in the computerized system of the State Department of Health.

The quantities of various types of hazardous wastes that were produced in the Bay Area counties and were dispoed of at Class I sites in 1976 are shown in Table 1. The quantities of hazardous wastes received at the three Bay Area Class I sitesin 1976 are summarized in Table 2. It should be noted that some of these wastes did not originate in the Bay Area. In addition, Figure 1 illustrates the monthly fluctuations in the amount of wastes being disposed of at the three Bay Area sites during 1976.

Based on this information, it is estimated that about 376,700 tons of wastes generated in the Bay Area were disposed of at Class I sites.

B. Wastes being disposed of on-site

An estimate of the amount of hazardous materials disposed of on-site is more difficult to obtain. A preliminary survey by the State Department of Health of the major users of on-site disposal indicated that there were at least 461,600 tons of hazardous materials disposed of on-site in 1976. Many refineries and chemical companies practice on-site disposal. Table 3 lists types of wastes and methods of on-site disposal. In addition, at the PG&E plants at the Geysers in Sonoma County, over seven million tons of spent power plant liquid condensed from steam was reinjected in 1976.

C. Wastes being recovered

There is no good method of estimating the amount of materials recovered for reuse. Romic Chemical Company in East Palo Alto operates the largest solvent reclamation and recovery business in the Bay Area. Its customers include paint companies, tape manufacturers, electronics firms, and industrial coating companies. Romic reclaims 1.5 million gallons (about 6,300 tons) of flamable solvents, as well as chlorinated and fluorinated solvents, annually. According to the company, this amount represents about 80% of the solvents being recovered in the region. Based on this information, the total amount of solvents being recovered in the region is estimated to be 1.9 million gallons or about 8,000 tons. It should be noted that another 0.5 million gallons of solvents were recovered at the Class I site in Martinez. (This amount was included in the 376,700 tons of wastes being disposed of at Class I sites.)

No similar information is available for estimating the other types of wastes being recovered. However, based on the results of the hazardous industrial wastes survey in Alameda County, it is estimated that about 150 tons of wastes (other than solvents) were being recycled in Alameda County in 1976. This amount is just about 0.3% of the total 50,100 tons of waste generated in the County and being disposed of at Class I sites (see Table 1). If the same percentage is applicable for the entire region, one can estimate that the amount of recovered wastes (other than solvents) in 1976 would be 1,100 tons (0.3% of 376,700 tons).

Based on the above estimates, the total amount of wastes being recovered in 1976 would be 9,100 tons(8,000 tons of solvents and 1,100 tons of other wastes). Again, these are rough estimates based on limited data.

TABLE 1. HAZARDOUS WASTES GENERATED IN THE BAY AREA AND DISPOSED OF AT CLASS I SITES IN 1976

County	Type of Wastes in Tons*																
	Acid	Alkali	Pesti-cide	Paint Sludge	Sol-vent	Tetra Ethyl Lead	Chem Toi-let	Tank Bottom	Oil	Drill Mud	Con-tam. Soil	Can-nery Waste	La-tex Waste	Mud & Water	Brine	Other	Total** (by County)	% of Total
Alameda	7,416	21,883	94	4,296	1,840	19	5	714	3,815	19	5	0	286	765	126	8,842	50,100	13.3
Contra Costa	32,129	31,049	202	324	2,920	206	91	10,968	57,516	265	209	43	48	7,206	95	46,628	189,900	50.4
Marin	0	62	0	0	0	0	0	8	64	0	0	0	0	23	0	182	400	0.1
Napa	0	0	0	0	31	5	0	0	25	0	0	0	0	6	0	57	200	0.0
San Francisco	718	213	66	536	105	4	0	877	1,544	470	19	0	0	1,517	19	1,952	8,000	2.1
San Mateo	6,319	3,210	39	1,948	879	19	63	338	135	21	0	0	0	321	146	2,501	16,000	4.2
Santa Clara	6,411	12,289	139	3,363	2,822	20	23	223	927	0	0	0	184	721	0	7,346	34,500	9.2
Solano	11,304	42,527	116	66	252	0	0	325	1,753	0	0	0	0	1,071	0	15,275	72,700	19.3
Sonoma	2,825	29	0	0	23	0	0	334	0	0	0	0	19	802	0	887	4,900	1.3
Total** (by type of wastes)	67,100	111,300	700	10,500	8,900	300	200	13,800	65,800	800	200	100	500	12,400	400	83,700	376,700	
% of Total	17.8	29.5	0.2	2.8	2.4	0.1	0.1	3.7	17.4	0.2	0.1	0.0	0.1	3.3	0.1	22.2		100%

*Assuming liquid waste has the same density as water (8.34 pounds per gallon).
**Rounded off to the nearest hundred tons.

Source: Manifest Summary of the State Department of Health

TABLE 2. HAZARDOUS WASTES DISPOSED OF AT THE BAY AREA CLASS I SITES IN 1976*

Site	Type of Wastes in Tons**																	
	Acid	Alkali	Pesti-cide	Paint Sludge	Sol-vent	Tetra Ethyl Lead	Chem Toi-let	Tank Bottom	Oil	Drill Mud	Con-tam. Soil	Can-nery Waste	La-tex Waste	Mud & Water	Brine	Other	Total*** (by site)	% of Total
Martinez	24,562	62,098	215	1,637	5,677	271	140	6,482	63,999	255	147	43	274	6,759	204	61,694	234,500	58.1
Benecia	41,316	42,062	157	1,217	125	63	0	1,476	3,521	838	40	0	45	3,395	0	14,304	108,600	26.9
Richmond	6,272	9,794	2,491	8,604	4,089	88	105	8,265	2,854	13	413	0	291	2,801	182	14,291	60,600	15.0
Total*** (by type of wastes)	72,100	114,000	2,900	11,500	9,900	400	200	16,200	70,400	1,100	600	100	600	13,000	400	90,300	403,700	100%
% of Total	17.9	28.2	0.7	2.9	2.5	0.1	0.1	4.0	17.4	0.3	0.1	0.0	0.1	3.2	0.1	22.4		100%

*Some wastes were generated outside the Bay Area.
**Assuming liquid waste has the same density as water (8.34 pounds per gallon).
***Rounded off to the nearest hundred tons.

Source: Manifest Summary of the State Department of Health

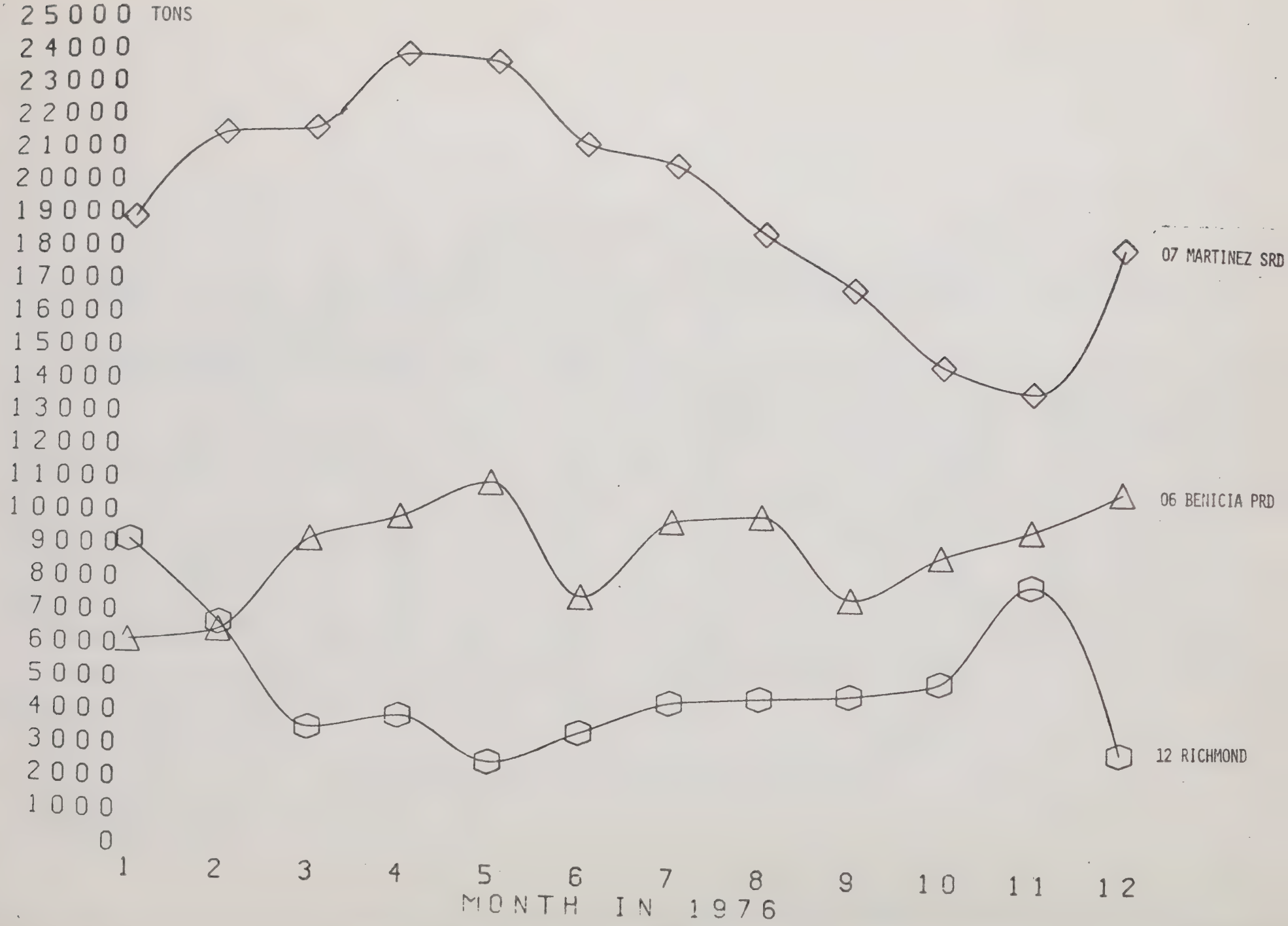

FIGURE 1 - MONTHLY MANIFEST SUMMARY OF CLASS I SITES IN THE BAY AREA

TABLE 3. On-site Disposal Methods Practiced in the Bay Area

Methods	Types of Wastes
1. Solar evaporation ponds (Lined or unlined)	Heavy metal sludges (Cu, Zn, Pb, Cr, Sn, etc.) Acids (hydrochloric acid, freon acid, etc.) Alkali Tetra ethyl lead (TEL) NH4 and PO4 salts Arsenic trisulfide Chlorosulfonated pyridine Phosphates Carbonates Silicates Surfactants Pesticides Insecticides Phenol formaldehyde Industrial cleaning compounds Caustic scrub
2. Biodegradation	Oil tank bottom residue Floc Oil and water Tetra ethyl lead (TEL) sludge wash
3. Burial	TEL sludge Polychlorinated biphenol (PCB)

It should be emphasized that the estimates do not include the amount of materials, such as manufacturing rejects, currently recovered in-plant for re-use in the manufacturing processes.

D. Wastes being disposed of by other methods

Some hazardous wastes are disposed of at Class II and Class III sites. Some may be incinerated or discharged into municipal sewer systems with or without prior treatment (pretreatment).

According to the Alameda County survey, about 170 tons of hazardous industrial wastes generated in the county were disposed of at Class II or Class III sites. In addition, about 16% of the industrial plants contacted in the county indicated sewer disposal of wastes. Some survey respondents indicated neutralization of acids prior to disposal into the sewer. Such wastes may or may not have been hazardous when they left the plants.

Based on the available information, one may assume that the amount of hazardous wastes being disposed of by other methods in 1976 would be less than 11,300 tons or 3% of the Bay Area hazardous wastes being disposed of at Class I sites. It should be noted that the 11,300 tons figure does not include sewage sludge from municipal wastewater treatment plants.

III. PROJECTED QUANTITIES OF HAZARDOUS INDUSTRIAL WASTES

It is estimated that the annual increase of hazardous waste quantities would range from 2 to 11%. A plausible estimated would be 5%*. Varying the rate of increase by type of waste or industry is beyond the scope of this technical memorandum. This rate of increase is based on the following estimates:

- Increase due to change in production and consumption rates +2%
- Increase due to federal and state pollution control requirement +3%
- Decrease due to legislative incentives and discentives +0%

+5%*

Based on the estimated 1976 waste quantity and a 5% annual rate of increase, the 1985 waste quantity is estimated to be 1.3 million tons. It should be noted that most wastes are in liquid form and may contain only a certain percentage of hazardous materials.

In the future, waste generators may concentrate their liquid wastes in order to reduce disposal costs which are based on the total volume of the liquid, but not the percentage of hazardous materials.

* $(1+0.02)(1+0.03)(1+0.00)=1.0506\approx1.05$

Factors affecting the rate of increase of wastes are further discussed in the following sections.

A. Production and consumption rates of manufacturing goods

In a report to Congress in 1974 on disposal of hazardous wastes, EPA stated:

> National production and consumption rates are increasing 4 to 6 percent per year, while recovery from wastes is declining. During the period 1948 to 1968, U.S. consumption of selected toxic metals increased 43 percent. Since 1954, production of synthetic organic chemicals has increased at an average rate of 10.5 percent per year. Included in the latter category are such materials as dyes, pigment, and pesticides. Some of these products contain heavy metals in addition to organic constituents. Similar data indicating production growth can be cited for most industries that generate hazardous waste. There is a correlation between the amount of production and waste generated. Therefore, it can concluded that hazardous waste generation rates will generally parallel industrial production rates.

Rates of growth for industries in the Bay Area are estimated in the ABAG Series 3 projections. Such rates are affected by a wide range of factors including the costs of raw materials and energy. Table 4 illustrates these rates for selected industries potentially producing hazardous wastes.

Table 4. Estimated Annual Rates of Growth for Selected Industries

Industry	SIC* Group	National Growth Rate, %	Bay Area Growth Rate, %
Textiles	22	0.2	5.7
Lumber	24	0.1	-0.5
Paper	26	1.7	0.4
Chemicals	28	2.2	6.3
Petroleum	29	0.7	-4.8
Rubber	30	3.5	-3.8
Leather	31	-1.0	6.8
Stone	32	2.1	-1.0
Primary Metals	33	-0.8	1.1
Fabric.Metals	34	1.9	-0.2
Non Elec. Mach.	35	1.0	5.2
Elec. Equip.	36	-0.5	3.8
Equipment	37	0.1	2.5

*Standard Industrial Code

Based on the above information, one can assume that the annual rate of increase for hazardous waste generation due to the increase in production and consumption rates would range from 0 to 6%. A plausible estimate would be 2%. This estimate could be refined by making a separate estimate for each type of waste or SIC code. Such a refinement may be possible when information such as obtained in the Alameda County survey is available for the entire region.

B. Federal and State pollution control requirements

It is generally agreed that more stringent Federal and state pollution control requirements will affect the amount of hazardous waste generated. For example, higher standards for effluent water quality will increase the amount of heavy metals which must be removed from industrial wastewater before discharge to the municipal sewer systems or to the receiving waters. Similarly, scrubbers to control waste gases before emission to the atmosphere may produce a certain amount of hazardous sludges.

In a report to the State legislature on the disposal of environmentally dangerous wastes in California, the State Solid Waste Management Board concluded:

> Estimates of the effects of the Federal Water Pollution Control Act (PL-92-500) regulations vary greatly -- the U.S. Environmental Protection Agency has estimated that the amount of hazardous wastes generated will increase by about 56 percent in the next decade. Information from the Los Angeles County Solid Waste Management Plan indicated that the additional amount of industrial or hazardous wastes anticipated to be produced as a result of industrial pretreatment processess to remove heavy metals in response to PL-92-500 could increase the generation of these wastes by 15 percent by 1985.

Based on the above estimates, one can assume that the annual rate of increase for hazardous wastes generation due to Federal and State pollution control requirements would range from about 2 to 5%. A plausible estimate would be 3%.

C. Legislative incentives and disincentives

There are many legislative proposals which would provide incentives or disincentives for hazardous waste management. One example is AB1593 introduced in the 1977-78 session of the State Legislature. It would require higher disposal fees at Class I sites. Other proposals may encourage recovery of hazardous wastes through tax incentives and low-interest loans for purchasing equipment to be used in the recovery processes. Overall effects of such proposals on hazardous waste management would be quite difficult to evaluate. In general, these proposals may not significantly reduce the amount of hazardous waste to be generated. However, they may reduce the amount of wastes to be disposed of at Class I sites as a result of resource recovery or waste concentration.

SW/Tech Memo 7/July 77
Revised January 24, 1978
Jeanne Perkins*

SOLID WASTE MANAGEMENT PLAN

IDENTIFICATION OF POSSIBLE CLASS I SITE AREAS

TECHNICAL MEMORANDUM NO. 7

JANUARY 24, 1978

INTRODUCTION

This technical memorandum describes a study aimed at finding general areas that warrant further study for use as Class I disposal sites. The project was a screening of the entire Bay Area--not a site specific investigation.

Three types of criteria were used in the screening process:

- strict hydrologic and geologic criteria
- gradational hydrologic and geologic criteria
- area acceptability criteria

Because of the large amount of spatial information that needed to be considered, and because of the flexibility needed in varying the criteria, the newly developed computer-based Bay Area Spatial Information System (BASIS) was used to produce the needed maps.

Significant findings of the study include:

- Over 900 square kilometers of land in the Bay Area meet the strict hydrologic and geologic criteria.

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* This study relied heavily on the ABAG Bay Area Spatial Information System (BASIS). The following BASIS staff participated in this study:
Paul Wilson, Chief of Technical Information
Mitch Modeleski, BASIS Coordinator
Nicki Glidden, Programmer
Don Olmstead, Director of Services and Information
Charlene McIntyre, Digitizing coordinator and planner
Stephenie Wilson, Planner
Pam Easterwood, Digitizer operator
Mark Goldman, Digitizer operator and cartographer
David Schweib, Digitizer operator
Francis Culwell, Digitizer operator
Paula Schulz, Digitizer operator

- Of this area about 560 square kilometers are unacceptable because they are in or near urbanized areas or failed to meet one or more of the other acceptability criteria. Approximately 220 square kilometers are only marginally acceptable and 140 square kilometers are acceptable.

- Most of the acceptable areas are in Solano, Contra Costa, Napa and Alameda Counties.

Further work is needed on determining the quantities of hazardous wastes generated and the need for additional Class I site capacity.

Two additional tasks related to Class I sites will be undertaken as part of the continuing planning process:

a) development of a process for verifying the acceptability of Class I sites in the possibly acceptable areas - This work has been done under a contract with the State Solid Waste Management Board and is included in the final project report on Environmentally Dangerous Waste in the San Francisco Bay Area (December, 1977).

b) recommendations for ensuring Class I site capacity - These will be prepared in cooperation with the solid waste management agencies in the nine Bay Area counties.

The criteria used have been adapted from those of the State Water Resources Control Board (1976) and others suggested by the U.S. Geological Survey (Hines, 1973). The State Water Resources Control Board requires all Class I sites to have a natural barrier to prevent vertical movement of the wastes to usable ground water. Inundation, washout, faulting, liquefaction, landsliding, or accelerated erosion are not acceptable.

The U.S. Geological Survey suggests a variety of criteria be considered that deal with land resources and land use, land slope, flooding, surface water resources, precipitation, ground water resources, soil permeability, erosion, geologic materials, and earthquakes.

The criteria have been divided into three groups: strict criteria, gradational criteria, and acceptability criteria (Table 1). The strict criteria eliminate those areas that are geologically unsuitable for sites. The gradational criteria flag those remaining areas as most likely, moderately likely, or not likely to be found suitable. The acceptability criteria attempt to flag the limitations of sites not related to hydrology or geology, or limitations that must be examined on an area by area basis.

The strict crtiteria chosen tend to be less strict than some experts might feel appropriate. It would be relatively easy to define criteria that would eliminate all areas from further consideration. Examples of such criteria would be to eliminate all areas of greater than 2% slope, of average annual rainfall greater than 5 inches, or of existing natural drainage which passes through urbanized areas or into the Bay. The rainful criterion, by itself, would eliminate the entire region. Such criteria have not been used for they do not provide as much information about the relative suitability of possible sites.

TABLE 1: CLASS I SITES CRITERIA

(adapted from USGS and SWRCB)

STRICT CRITERIA

Out of flood prone areas
Not in areas which average greater than 30 inches of rain annually
Not in an earthquake hazard area
*Not on unconsolidated geologic materials
Not on unstable materials or on greater than 15% slope

GRADATIONAL CRITERIA

Minimize amount of precipitation
*Minimize likelihood of significant yield from wells
*Prefer older rocks that are not granitic or part of the Franciscan Assemblage
*Minimize soil permeability
Maximize relative slope stability and minimize soil erosion potential

ACCEPTABILITY CRITERIA

Not in or adjacent to developed areas or areas with development potential
Not publically owned for parks, recreation, etc.
Not in ecologically sensitive areas
Not on or affecting regionally significant agricultural crops
Reasonably accessible for trucks
Maximize public and governmental acceptance
*Prefer shales or oil bearing sandstones and avoid highly sheared materials
Setback from waters used for drinking and recreation

PROCEDURE

The procedure used for identifying and mapping potential areas for Class I sites consists of six steps.

STEP 1 - COLLECT MAPS

The various criteria were approximated by categories on generalized, small-scale maps. Table 2, below, illustrates these relationships. In addition, for each of the gradational criteria, a numerical value was assigned to various categories on the maps to represent the relative value of each concern. These values are based on those suggested by the U.S. Geological Survey (Hines, 1973). Although numbers based on the relative cost of engineering for those concerns would be less arbitrary, for some of the variables, such values have never been compiled and cannot be obtained easily.

* All five criteria are aimed at identifying areas where there is a natural barrier between the surface and ground water.

TABLE 2: UNITS ON MAPS CORRESPONDING TO CRITERIA FOR SITES

Strict Criteria	Map Source
Out of flood prone areas	Areas within 100-year flood plains on USGS/SFBRS Map (Limerinos, et al., 1973) (Scale 1:125,000)
Not in areas which average greater than 30 inches of rain, annually	Areas within 30 inch isohyetal on USGS/SFBRS Map (Rantz, 1971) (Scale 1:500,000)
Not in an earthquake hazard area	Areas of San Franciscan intensity A or B, or within .2km. of fault capable of producing groundshaking on ABAG Earthquake Preparedness Program Map (USGS process)-(ABAG, in press) (Scale 1:125,000)
Not on unconsolidated geologic materials	Areas shown as Quaternary or Quaternary/Tertiary in age on USGS/SFBRS or CDMG geologic maps (Scale 1:62,500 or 1:125,000)
Not on unstable materials or on greater than 15% slope	Areas shown as Categories 1 or 2 on USGS/SFRBS map (Nilsen, in press) (Scale 1:125,000)

Gradational Criteria	Map Source
Minimize amount of precipitation	Assign "3" to 0 to 20 inches and assig "2" to 20 to 30 inches on USGS/SFRBS map (Rantz, 1971) (Scale 1:500,000)
Minimize likelihood of significant yield from wells	Assign "3" to Category A, "1" to Category B and "0" to categories C and D on USGS/SFBRS map of well yield (Webster, 1972)(Scale 1:250,000)

Gradational Criteria (Cont.)	Map Source (Cont.)
Prefer older rocks that are not granitic or part of the Franciscan Assemblage	Assign "1" to Franciscan Assemblage and granitic rocks and assign "3" to other Tertiary or older rocks on USGS/SFRBS or CDMG geologic maps (Scale 1: 62,500 and 1:125,000)
Maximize soil permeability	Assign "3" to extremely impermeable soils, "2" to very impermeable soils, "1" to moderately permeable soils, and "0" to permeable soils on the SCS/AGAG map of soil associations (Scale 1:125,000)
Maximize relative slope stability and minimize soil erosion potential	Assign "3" to category 1 and "1" to category 2 on USGS/SFBRS maps (Nilsen, in press)(Scale 1:125,000)
Acceptability Criteria	Map Source
Not in or adjacent to developed areas or areas with development potential	Developed lands and lands with development potential on ABAG Local Policy Survey Summary Map (1977) (Scale 1:125,000)
Not publically owned for parks, recreation, etc.	Road maps (various scales); local plans when applicable
Not in ecologically sensitive area	USGS Topographic sheets (Scale 1:24,000)& Areas of Critical Envir. Concern (ABAG,1976)
Not on or affecting regionally significant agricultural crops	No available maps-general information from ABAG's San Mateo Coast Corridor Evaluation and Areas of Critical Environmental Concern reports.
Reasonably accessible by trucks	Road maps (various scales) and ABAG base map (Scale 1:125,000)
Maximize public and governmental acceptance (to the extent possible prior to public workshops)	Not mappable; discussions with selected county staff

Acceptability Criteria (Cont.)	Map Source (Cont.)
Prefer shales or oil bearing sandstones and avoid highly sheared materials	USGS/SFRBS or CDMG geologic maps (Scale 1:62,500 or 1:125,000)
Setback from waters used for drinking or recreation	ABAG base map (Scale 1:125,000)

STEP 2 - DIGITIZE MAPS

The maps collected in the previous step were then digitized. A digitizer is a device used to convert mapped information into numbers suitable for use by a computer. It consists of three main parts:

(1) a surface mounted on a drafting table base (on which the maps are placed;

(2) a cursor* which is moved on maps so that the X and Y coordinates of points along the lines on the map can be recorded; and

(3) a computer terminal for recording the map category number on both sides of each line being traced.

STEP 3 - GRID MAPS

The numerical data obtained in the digitizing process were then converted by ABAG's mini-computer into grid cells. Grid cells represent mapped information by generalizing areas into boxes (see Figure 1, below).

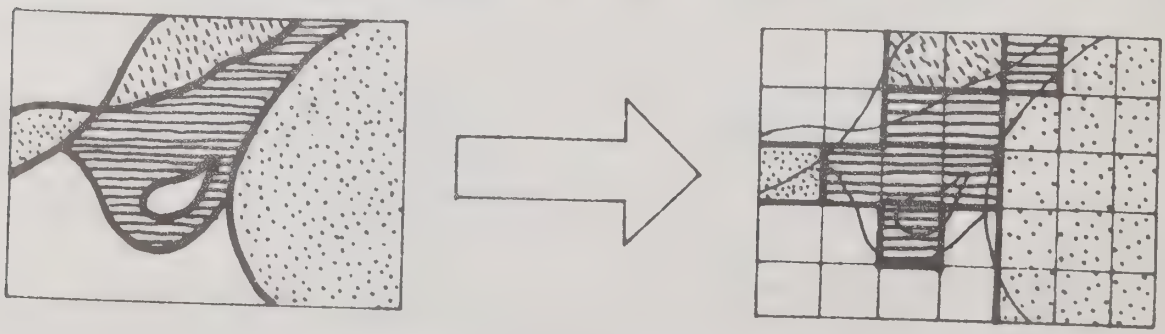

FIGURE 1: GRID CELL REPRESENTATION

The grid cell size chosen represents the limits of the resolution of the mapped information. The grid cell size chosen for this project was ½ km. by ½km. (¼ square kilometer) or approximately 62 acres. This size was felt to be

* The cursor is a disk with buttons for indicating when a line is being traced and when the line ends. It also has a sight with cross hairs to aid in tracing the lines.

appropriate because a typical Class I site is about three times this large. The grid cells are registered to a Universal Transverse Mercator (UTM) base rather than latitude-longitude coordinates.

The end results of this process were eight computer files-- one for each type of map:

- coastline
- generalized geologic materials
- soil associations
- average annual precipitation isohyetals
- Alquist-Priolo Special Study Zones (for active faults)
- 100-year flood plains
- probable maximum well yield
- relative slope stability*

STEP 4 - RUN MODELS

A VARIAN mini-computer then was used to combine the files so that maps representing both the strict and gradational criteria could be produced. First, a program (SEARCH) was run to calculate distances from each of the several faults in the Bay Area. Second, a modeling program was used. The four models that were run to produce the final map are included as Appendix A.

STEP 5 - PRODUCE SHADED MAPS

A STATOS Printer-Plotter then produced shaded maps. Simple changes in the mapping program enable the printing of working maps at scales of 1:1,000,000 , 1:500,000, 1:250,000, 1:125,000, and even a 1:62,500 map for part of the region.

STEP 6 - ANALYZE ACCEPTABILITY

Several cells in discrete areas with similar characteristics were grouped for ease in applying the area acceptability criteria. Tables were prepared showing the results of this analysis.

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* The relative slope stability file was produced by the UC Davis Division of Environmental Studies using a different procedure. Linda Thorpe was in charge of this digitizing activity.

RESULTS

3,694 cells or 923½ square kilometers (over 350 square miles) in the Bay Area passed the strict criteria.

Table 3 below lists the number of cells that accumulated various numbers of points. The more points a cell accumulated, the more likely it is to be found geologically suitable for a Class I site. Plate 1 illustrates the location of these areas.

TABLE 3: NUMBER OF CELLS ACCUMULATING VARIOUS NUMBERS OF GRADATIONAL POINTS

Gradational point range	Number of cells
3 - 4	2
5 - 6	30
7 - 8	980
9 - 10	1352
11 - 12	1031
13 - 14	273
15	26

The Tables used in rating the overall acceptability of the areas mapped are included as Appendix B. The findings are summarized in Table 4, below.

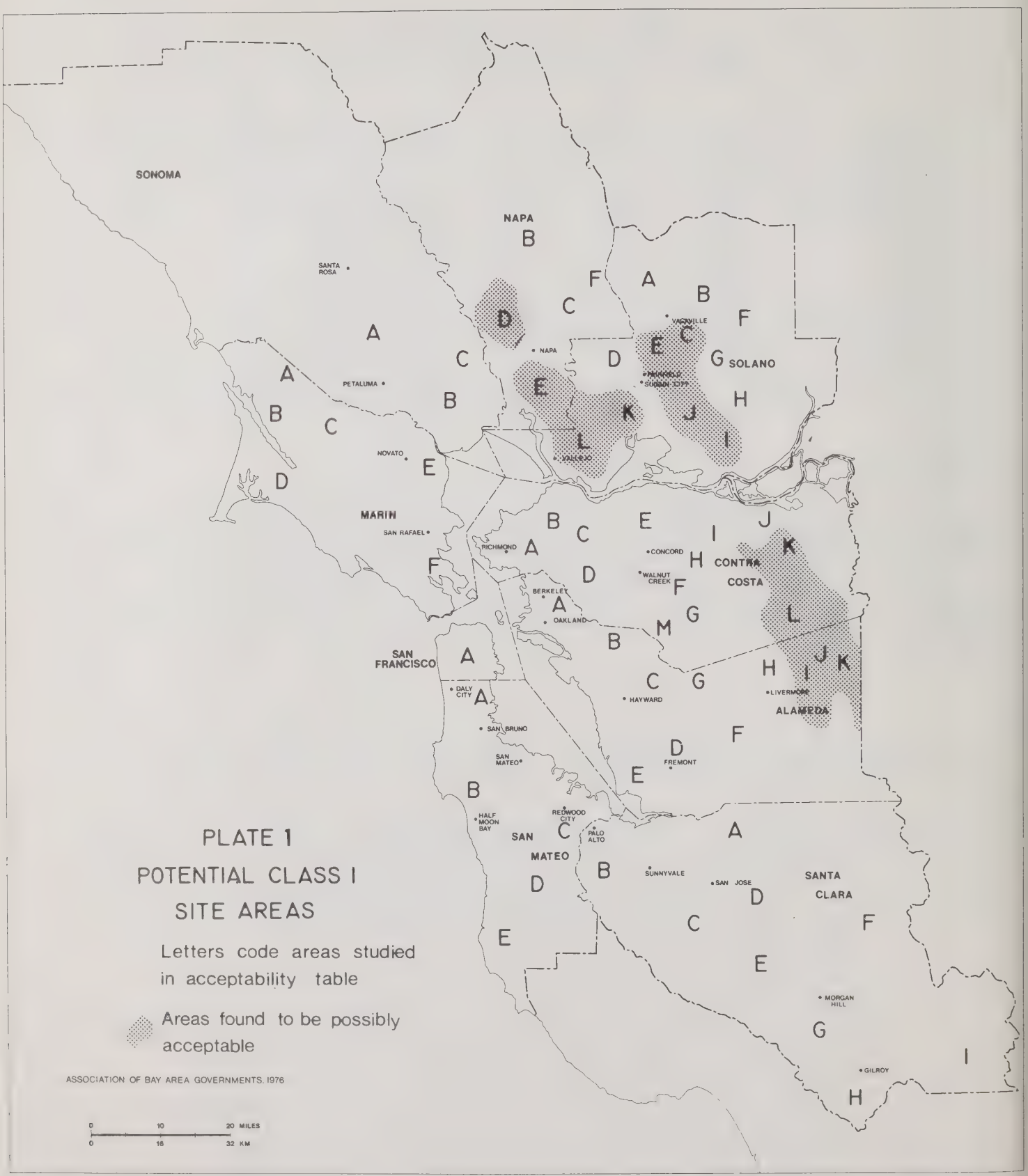
The acceptable cells in Alameda County are in the vicinity of Altamont Pass. Those in Contra Costa County are in the east county on the edge of the Central Valley. Those in Napa County border the hills in the southern portion of that County. Those in Solano County are in the hills south of Vacaville, in the hills northwest of Fairfield, in the western Montezuma hills,in the hills near Suisun and Deverton, and in the hills north of Benecia and Vallejo.

TABLE 4: AREA IN EACH COUNTY
UNDEVELOPED AND POSSIBLY ACCEPTABLE FOR USE AS POTENTIAL
CLASS I SITES (IN 1/4 SQUARE KILOMETERS)

COUNTY	TOTAL	URBAN OR PARK	DEV. POT.	UNDEV.	UNAC.	PROB. UNACEP.	POSSIBLY ACCEP.
ALAMEDA	295	69	17	209	128	77	90
CONTRA COSTA	613	184	86	343	284	186	143
MARIN	366	193	25	148	319	47	-
NAPA	651	4	72	575	545	15	91
S.F.	20	20	-	-	20	-	-
SAN MATEO	135	75	21	39	122	13	-
SANTA CLARA	310	26	111	173	296	14	-
SOLANO	575	32	87	456	262	95	218
SONOMA	729	34	160	535	288	434	7
TOTAL	3694	637	579	2478	2264	881	549

NEXT STEPS

In the following months, better data needs to be collected on the amount of hazardous wastes being generated. The proposed county surveys should provide the needed information. As part of the State Solid Waste Management Board contract, ABAG has prepared a process for verifying the acceptability of possible Class I site areas. If needed, ABAG will work with the affected local jurisdictions to place some areas in reserve status for use as future Class I disposal sites.


SONOMA
NAPA
SANTA ROSA
PETALUMA
NOVATO
MARIN
SAN RAFAEL
VACAVILLE
NAPA
FAIRFIELD
SUISUN CITY
SOLANO
VALLEJO
RICHMOND
CONCORD
WALNUT CREEK
CONTRA COSTA
BERKELEY
OAKLAND
SAN FRANCISCO
DALY CITY
SAN BRUNO
SAN MATEO
HAYWARD
LIVERMORE
ALAMEDA
FREMONT
HALF MOON BAY
REDWOOD CITY
PALO ALTO
SAN MATEO
SUNNYVALE
SAN JOSE
SANTA CLARA
MORGAN HILL
GILROY
PLATE 1
POTENTIAL CLASS I
SITE AREAS
Letters code areas studied in acceptability table
Areas found to be possibly acceptable
ASSOCIATION OF BAY AREA GOVERNMENTS. 1976
0 10 20 MILES
0 16 32 KM

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APPENDIX A: COMPUTER MODELS

MODEL 1: EINT

```
   FILE 11 IS A SINGLE VARIABLE (SV) INPUT      FAULT SEARCH 1 FILE
   FILE 12 IS A SINGLE VARIABLE (SV) INPUT      FAULT SEARCH 2 FILE
   FILE 13 IS A SINGLE VARIABLE (SV) INPUT      FAULT SEARCH 3 FILE
   FILE 14 IS A SINGLE VARIABLE (SV) INPUT      GEOLOGY FILE
 1 IF SV 14 IS FROM     0 TO  6500, ADD   -9    IF 0<=GEOL<=6500 ASSIGN -9
     THEN SKIP TO END
 2 IF SV 14 IS FROM  6515 TO  6515,
 3 AND SV 11 IS FROM     0 TO     1, ADD   -1   IF GEOLOGY = 6515
     THEN SKIP TO END                          AND FAS1=0,1, ASSIGN -1
 4 IF SV 14 IS FROM  6514 TO  6514,
 5 AND SV 11 IS FROM     0 TO     1, ADD   -1   IF GEOLOGY = 6514 AND
     THEN SKIP TO END                          F AS1 = 1,0, ASSIGN -1
 6 IF SV 14 IS FROM  6513 TO  6513,
 7 AND SV 11 IS FROM     0 TO     3, ADD   -1   IF GEOLOGY = 6513 AND
     THEN SKIP TO END                          FAS1 = 0-3, ASSIGN -1
 8 IF SV 14 IS FROM  6515 TO  6515,
 9 AND SV 12 IS FROM     0 TO     1, ADD   -1   IF GEOLOGY = 6515 AND
     THEN SKIP TO END                          FAS2 = 0,1, ASSIGN -1
10 IF SV 14 IS FROM  6514 TO  6514,
11 AND SV 12 IS FROM     0 TO     1, ADD   -1   IF GEOLOGY = 6514 AND
     THEN SKIP TO END                          FAS2 = 0,1, ASSIGN -1
12 IF SV 14 IS FROM  6513 TO  6513,
13 AND SV 12 IS FROM     0 TO     3, ADD   -1   IF GEOLOGY = 6513 AND
     THEN SKIP TO END                          FAS2 = 0,3, ASSIGN -1
14 IF SV 14 IS FROM  6515 TO  6515,
15 AND SV 13 IS FROM     0 TO     1, ADD   -1   IF GEOLOGY = 6515 AND
     THEN SKIP TO END                          FAS3 = 0,1, ASSIGN -1
16 IF SV 14 IS FROM  6514 TO  6514,
17 AND SV 13 IS FROM     0 TO     1, ADD   -1   IF GEOLOGY = 6514 AND
     THEN SKIP TO END                          FAS3 = 0,1, ASSIGN -1
18 IF SV 14 IS FROM  6513 TO  6513,
19 AND SV 13 IS FROM     0 TO     3, ADD   -1   IF GEOLOGY = 6513 AND
     THEN SKIP TO END                          FAS3 = 0,3, ASSIGN -1
20 IF SV 14 IS FROM  6510 TO  6512, ADD   -1    IF 6510<=GEOL<=6512 ASSIGN -1
     THEN SKIP TO END
21 IF SV 14 IS FROM  6513 TO  6513, ADD    3    IF GEOL = 6513, ASSIGN 3
     THEN SKIP TO END
22 IF SV 14 IS FROM  6514 TO  6515, ADD    1    IF 6514<=GEOL<=6515 ASSIGN +1
     THEN SKIP TO END
```

MODEL 2: JENM

```
   FILE 11 IS A SINGLE VARIABLE (SV) INPUT      FAULT FILE
   FILE 12 IS A SINGLE VARIABLE (SV) INPUT      SLOPE STABILITY FILE
   FILE 13 IS A SINGLE VARIABLE (SV) INPUT      GEOLOGY FILE
   FILE 14 IS A SINGLE VARIABLE (SV) INPUT      PRECIPITATION FILE
 1 IF SV 13 IS FROM     0 TO  6500, ADD   -9    IF 0<=GEOL<=6500, ASSIGN -9
     THEN SKIP TO END
 2 IF SV 11 IS FROM  5001 TO  5052, ADD   -1    IF 5001<=FAULTS<=5052,ASSIGN -1
     THEN SKIP TO END
 3 IF SV 12 IS FROM  6803 TO  6803, ADD   -9    IF SLOPE=6803, ASSIGN -9
     THEN SKIP TO END
 4 IF SV 12 IS FROM  6804 TO  6804, ADD   -1    IF SLOPE=6804, ASSIGN -1
     THEN SKIP TO END
 5 IF SV 14 IS FROM  6713 TO  6728, ADD   -1    IF 6713<=PRECIP<=6728,ASSIGN -1
     THEN SKIP TO END
 6 IF SV 13 IS FROM  6510 TO  6512, ADD   -1    IF 6510<=GEOL<=6512, ASSIGN -1
     THEN SKIP TO END
 7 IF SV 12 IS FROM  6801 TO  6801, ADD    3    IF SLOPE = 6801, ASSIGN 3
     THEN SKIP TO END
 8 IF SV 12 IS FROM  6802 TO  6802, ADD    1    IF SLOPE = 6802, ASSIGN 1
     THEN SKIP TO END
 9 IF SV 11 IS FROM     0 TO     0, ADD   -1    IF FAULTS = 0, ASSIGN -1
     THEN SKIP TO END
10 IF SV 12 IS FROM     0 TO  6800, ADD   -9    IF 0<=SLOPE<=6800, ASSIGN -9
     THEN SKIP TO END
```

MODEL 3: STRT

```
   FILE 11 IS A SINGLE VARIABLE (SV) INPUT      EARTHQUAKE INTENSITY FILE
   FILE 12 IS A SINGLE VARIABLE (SV) INPUT      JEANNE'S FIRST MODEL FILE
   FILE 13 IS A SINGLE VARIABLE (SV) INPUT      UPDATED FLOOD PLAIN FILE
   FILE 14 IS A SINGLE VARIABLE (SV) INPUT      COASTLINE FILE
 1 IF SV 14 IS FROM  6501 TO  6502, ADD  -10    IF COAS = 6501,6502 ASSIGN -10
     THEN SKIP TO END
 2 IF SV 14 IS FROM  6504 TO  6504, ADD  -10    IF COAS = 6504 ASSIGN -10
     THEN SKIP TO END
 3 IF SV 11 IS FROM    -9 TO    -9, ADD   -9    IF FINI = -9 ASSIGN -9
     THEN SKIP TO END
 4 IF SV 12 IS FROM    -9 TO    -9, ADD   -8    IF JENM = -9 ASSIGN -8
     THEN SKIP TO END
 5 IF SV 12 IS FROM    -1 TO    -9, ADD   -1    IF JENM = -1 ASSIGN -1
     THEN SKIP TO END
 6 IF SV 11 IS FROM    -1 TO    -9, ADD   -1    IF FINI = -1 ASSIGN -1
     THEN SKIP TO END
 7 IF SV 13 IS FROM  6730 TO  6730, ADD   -1    IF UFLD = 6730 ASSIGN -1
     THEN SKIP TO END
 8 IF SV 11 IS FROM     1 TO     1, ADD    1    IF FINI = +1 ADD +1
 9 IF SV 12 IS FROM     1 TO     1, ADD    1    IF JENM = +1 ADD +1
10 IF SV 11 IS FROM     3 TO     3, ADD    3    IF FINI = +3 ADD +3
11 IF SV 12 IS FROM     3 TO     3, ADD    3    IF JENM = +3 ADD +3
```

MODEL 4: GRAD

```
   FILE 11 IS A SINGLE VARIABLE (SV) INPUT      STRICT CRITERION FILE
   FILE 12 IS A SINGLE VARIABLE (SV) INPUT      WELL YIELD FILE
   FILE 13 IS A SINGLE VARIABLE (SV) INPUT      PRECIPITATION FILE
   FILE 14 IS A SINGLE VARIABLE (SV) INPUT      SOILS FILE
 1 IF SV 11 IS FROM   -10 TO   -10, ADD  -10    IF STRT = -10 ASSIGN -10
     THEN SKIP TO END
 2 IF SV 12 IS FROM  6900 TO  6900, ADD  -11    IF UWEL = 6900 ASSIGN -11
     THEN SKIP TO END
 3 IF SV 11 IS FROM    -9 TO    -9, ADD   -9    IF STRT = -9 ASSIGN -9
     THEN SKIP TO END
 4 IF SV 11 IS FROM    -8 TO    -8, ADD   -8    IF STRT = -8 ASSIGN -8
     THEN SKIP TO END
 5 IF SV 11 IS FROM    -1 TO    -1, ADD   -1    IF STRT = -1 ASSIGN -1
     THEN SKIP TO END
 6 IF SV 11 IS FROM     2 TO     2, ADD    2    IF STRT = 2 ASSIGN 2
 7 IF SV 11 IS FROM     4 TO     4, ADD    4    IF STRT = 4 ASSIGN 4
 8 IF SV 11 IS FROM     6 TO     6, ADD    6    IF STRT = 6 ASSIGN 6
 9 IF SV 13 IS FROM  6700 TO  6707, ADD    3    IF 6700<=UPRE<=6707 ASSIGN  3
10 IF SV 13 IS FROM  6708 TO  6712, ADD    2    IF 6708<=UPRE<=6712 ADD +2
11 IF SV 12 IS FROM  6950 TO  6950, ADD    3    IF UWEL = 6950 ADD +3
12 IF SV 12 IS FROM  6951 TO  6951, ADD    1    IF UWEL = 6951 ADD +1
13 IF SV 14 IS FROM  6811 TO  6811, ADD    1    IF SOIX = 6811 ADD 1
14 IF SV 14 IS FROM  6812 TO  6814, ADD    2    IF SOIX = 6812 TO 6814 ADD 2
15 IF SV 14 IS FROM  6815 TO  6815, ADD    1    IF SOIX = 6814 ADD 1
16 IF SV 14 IS FROM  6819 TO  6819, ADD    1    IF SOIX = 6819 ADD 1
17 IF SV 14 IS FROM  6820 TO  6821, ADD    3    IF SOIX = 6820 TO 6821 ADD 3
18 IF SV 14 IS FROM  6822 TO  6823, ADD    2    IF SOIX = 6822 TO 6823 ADD 2
19 IF SV 14 IS FROM  6824 TO  6830, ADD    1    IF SOIX = 6824 TO 6830 ADD 1
20 IF SV 14 IS FROM  6832 TO  6832, ADD    1    IF SOIX = 6832 ADD 1
21 IF SV 14 IS FROM  6833 TO  6836, ADD    2    IF SOIX = 6833 TO 6836 ADD 2
22 IF SV 14 IS FROM  6837 TO  6837, ADD    3    IF SOIX = 6837 ADD 3
23 IF SV 14 IS FROM  6840 TO  6840, ADD    1    IF SOIX = 6840 ADD 1
24 IF SV 14 IS FROM  6844 TO  6846, ADD    1    IF SOIX = 6844 TO 6846 ADD 1
25 IF SV 14 IS FROM  6848 TO  6848, ADD    2    IF SOIX = 6848 ADD 2
26 IF SV 14 IS FROM  6850 TO  6854, ADD    1    IF SOIX = 6850 TO 6854 ADD 1
27 IF SV 14 IS FROM  6855 TO  6855, ADD    2    IF SOIX = 6855 ADD 2
28 IF SV 14 IS FROM  6856 TO  6859, ADD    1    IF SOIX = 6856 TO 6859 ADD 1
29 IF SV 14 IS FROM  6860 TO  6860, ADD    2    IF SOIX = 6860 ADD 2
30 IF SV 14 IS FROM  6861 TO  6861, ADD    3    IF SOIX = 6861 ADD 3
```

```
31 IF SV 14 IS FROM  6862 TO  6862, ADD    1   IF SOIX = 6862 ADD 1
32 IF SV 14 IS FROM  6863 TO  6866, ADD    2   IF SOIX = 6863 TO 6866 ADD 2
33 IF SV 14 IS FROM  6867 TO  6867, ADD    3   IF SOIX = 6867 ADD 3
34 IF SV 14 IS FROM  6868 TO  6868, ADD    2   IF SOIX = 6868 ADD 2
35 IF SV 14 IS FROM  6869 TO  6869, ADD    1   IF SOIX = 6869 ADD 1
36 IF SV 14 IS FROM  6870 TO  6871, ADD    3   IF SOIX = 6870 TO 6871 ADD 3
37 IF SV 14 IS FROM  6872 TO  6872, ADD    2   IF SOIX = 6872 ADD 2
38 IF SV 14 IS FROM  6873 TO  6874, ADD    3   IF SOIX = 6873 TO 6874 ADD 3
39 IF SV 14 IS FROM  6875 TO  6876, ADD    1   IF SOIX = 6875 TO 6876 ADD 1
40 IF SV 14 IS FROM  6877 TO  6877, ADD    3   IF SOIX = 6877 ADD 3
41 IF SV 14 IS FROM  6878 TO  6878, ADD    2   IF SOIX = 6878 ADD 2
42 IF SV 14 IS FROM  6879 TO  6879, ADD    3   IF SOIX = 6879 ADD 3
43 IF SV 14 IS FROM  6880 TO  6880, ADD    1   IF SOIX = 6880 ADD 1
44 IF SV 14 IS FROM  6881 TO  6882, ADD    3   IF SOIX = 6881 TO 6882 ADD 3
45 IF SV 14 IS FROM  6883 TO  6885, ADD    1   IF SOIX = 6883 TO 6885 ADD 1
46 IF SV 14 IS FROM  6890 TO  6891, ADD    1   IF SOIX = 6890 TO 6891 ADD 1
47 IF SV 14 IS FROM  6892 TO  6894, ADD    2   IF SOIX = 6892 TO 6894 ADD 2
48 IF SV 14 IS FROM  6895 TO  6896, ADD    1   IF SOIX = 6895 TO 6896 ADD 1
49 IF SV 14 IS FROM  6897 TO  6898, ADD    2   IF SOIX = 6897 TO 6898 ADD 2
50 IF SV 14 IS FROM  6899 TO  6905, ADD    1   IF SOIX = 6899 TO 6905 ADD 1
51 IF SV 14 IS FROM  6906 TO  6906, ADD    2   IF SOIX = 6906 ADD 2
52 IF SV 14 IS FROM  6907 TO  6913, ADD    1   IF SOIX = 6907 TO 6913 ADD 1
53 IF SV 14 IS FROM  6914 TO  6914, ADD    2   IF SOIX = 6914 ADD 2
54 IF SV 14 IS FROM  6915 TO  6916, ADD    1   IF SOIX = 6915 TO 6916 ADD 1
55 IF SV 14 IS FROM  6919 TO  6923, ADD    1   IF SOIX = 6919 TO 6923 ADD 1
56 IF SV 14 IS FROM  6925 TO  6934, ADD    1   IF SOIX = 6925 TO 6934 ADD 1
57 IF SV 14 IS FROM  6937 TO  6939, ADD    1   IF SOIX = 6937 TO 6939 ADD 1
```

DATA CODES

FAULTS

5001 N. San Andreas main
5002 N. San Andreas minor
5003 N. San Andreas underwater
5004 N. San Andreas minor
5005 N. San Andreas minor
5006 N. San Andreas Bodega Head minor
5007 N. San Andreas minor
5008 N. San Andreas minor
5009 S. San Andreas main
5010 S. San Andreas minor
5011 S. San Andreas minor
5012 San Gregorio main
5013 San Gregorio minor
5014 San Gregorio underwater
5015 San Gregorio minor
5016 "
5017 "
5018 N.E. Alexander main
5019 N.E. Alexander minor
5020 N.E. Alexander-Alexander Valley
5021 Healdsburg-Rodgers Crk main
5022 Healdsburg-Rodgers minor
5023 "
5024 "
5025 "
5026 "
5027 "
5028 Healdsburg-Rodgers Tolay Branch
5029 Concord-Green Valley main Green Valley
5030 Concord-Green Valley main Concord
5031 Concord-Green Valley underwater
5032 Antioch main
5033 N. Hayward main
5034 "
5035 N Hayward minor
5036 "
5037 "
5038 S. Hayward main
5039 S. Hayward minor
3040 "
5041 Calaveras main
5042 Calaveras minor
5043 "
5044 "
5045 "
5046 "
5047 Calaveras western branch
5048 Pleasanton main
5049 Silver Crk amin
5050 Silver Crk-Evergreen
5051 Silver Crk minor
5052 Silver Crk-Coyote Crk
5053 Sargent main
5054 Berrocal main
5055 zayante main
5056 Black Mt. main

GEOLOGY

6510 Quaternary Bay Mud
6511 Quaternary alluvium
6512 Quaternary-Tertiary materials
6513 Most Tertiary and older materials
6514 Franciscan Assemblage
6515 Granitic rock

COASTLINE

6501 ocean/bay
6502 slough
6503 marsh
6504 mud

PRECIPITATION

6701 6-8"
6702 8-10
6703 10-12
6704 12-14
6705 14-16
6706 16-18
6707 18-20
6708 20-22
6709 22-24
6710 24-26
6711 26-28
6712 28-30
6713 30-32
6714 32-24
6715 34-36
6716 36-38
6717 38-40
6718 40-44
6719 44-48
6720 48-52
6721 52-56
6722 56-60
6723 60-64
6724 64-68
6725 68-72
6726 72-76
6727 76-80
6728 80-84

FLOOD PLAINS

6730

WELL YIELD

6950 category A
6951 B
6952 C
6953 D

SOILS

6810 through 6944
6945 out of region

SLOPE STABILITY

6801 0-5% slope
6802 5-15% slope
6803 15%+ slope, stable
6804 15%+ slope, unstable

APPENDIX B:

ACCEPTABILITY TABLES

ALAMEDA COUNTY

CODE	SIZE (# cells)	LOCATION	PRESENT USE(S)*	ADJACENT USE(S)	TRANSPORTATION ACCESS	GEOLOGIC MATERIALS	NEAREST SURFACE WATER	OTHER ISSUES	OVERALL AREA ACCEPTABILITY
A	10	Oakland/ Piedmont Hills	Urban (10)	Urban	Highway 13	Franciscan Assemblage	Drainage through urbanized Oakland to Bay		Unacceptable
B	17	Oakland Hills	Urban (12) Dev. Pot. (3) Undev. (2)	Urban and park	Highway 13	Mixture of serpentine, Tl and Creta/ Jurassic sandstones and shales	Drainage through San Leandro to Bay		Unacceptable
C	42	Hayward/Castro Valley	Urban (30) Dev. Pot. (7) Undev. (5)	Urban and park	Highways 580 & 238; poor for undev. areas	Mixture similar to "B" above; undev. is undifferentiated Cretaceous sandstone and shale	Drainage through Castro Valley to Bay		Unacceptable
D	7	Fremont Hills	Urban (7)	Urban	Highway 238	Tertiary and Jurassic sandstone and shale	Drainage through Newark to Bay		Unacceptable
E	2	Coyote Hills	Quarry and park (2)	Park, urban and salt ponds	Highway 84	Mixed Franciscan Assemblage	Drains to salt ponds and Bay		Unacceptable

* Number of cells in each category are in parentheses.

ALAMEDA COUNTY (cont.)

CODE	SIZE (= cells)	LOCATION	PRESENT USE	ADJACENT USE(S)	TRANSPORTATION ACCESS	GEOLOGIC MATERIALS	NEAREST SURFACE WATER	OTHER ISSUES	OVERALL AREA ACCEPTABILITY
F	18	Vicinity of Sunol	Undev. (18)	Undev. grazing and urban	Highways 238 and 680	Tertiary sandstones and shales	Near San Antonio Res. and So. Bay Aqueduct	Scattered sites only	Unaccepted
G	3	Dublin Area	Undev. (3)	Undev. grazing	Highways 580 and 680	Tertiary sandstones and shales	Drainage into San Ramon Ck.	Scattered low density residential development; probably politically unacceptable	Unacceptable
H	30	North Livermore Hills	Urban (8) Dev. Pot. (2) Undev. (20)	Undev. grazing and urban	Highway 580	Unconsolidated young Tertiary sedimentary materials	Cayebana and Arroyo Creeks	Air pollution problems	Probably unacceptable even for undev. cells
I	62	East Livermore Hills	Dev. Pot. (5) Undev. (57)	Undev. grazing and urban	Highway 580; poor to outlying areas	Mixture of Tertiary sandstones and shales with Franciscan Assemblage	Cayebana and Arroyo Creeks	Near Livermore Rad. Lab.; air pollution problems	Probably unacceptable even for undev. cells
J	24	Altamont Pass Area	Undev. (24)	Undev. grazing	Highway 580; poor in outlying areas	Mixture of Tertiary and Cretaceous sandstone and shale		Vicinity of future Class II site	Possibly acceptable for all but four remote cells

ALAMEDA COUNTY (Cont.)

CODE	SIZE (# cells)	LOCATION	PRESENT USE	ADJACENT USE(S)	TRANSPORTATION ACCESS	GEOLOGIC MATERIALS	NEAREST SURFACE WATER	OTHER ISSUES	OVERALL AREA ACCEPTABILITY
K	80	Central Valley Foothills	Undev. (80)	Undev. grazing and row crops	Highways 5 and 580; poor in outlying areas	Mixture of Tertiary and Cretaceous sandstone and shale	3 cells at south end adjacent to creek		Possibly acceptable for all but seven remote cells and 3 cells at the south end
Summary	295		Park and Urban (69) Dev. Pot.(17) Undev. (209)						Unacceptable (128) Probably unacceptable (77) Possibly acceptable (90)

CONTRA COSTA COUNTY

CODE	SIZE (# cells)	LOCATION	PRESENT USE	ADJACENT USE(S)	TRANSPORTATION ACCESS	GEOLOGIC MATERIALS	NEAREST SURFACE WATER	OTHER ISSUES	OVERALL AREA ACCEPTABILITY
A	54	El Cerrito/San Pablo Hills	Urban (53) Undev. (1)	Urban and undev. grazing	Highway 80	Largely Tertiary sandstone and shale	Drainage through San Pablo and Richmond to Bay	Existing Class I site in this area	Unacceptable
B	61	Pinole/El Sobrante Hills	Urban (34) Dev. Pot. (27)	Urban and undeveloped	Highway 80	Tertiary sandstone and shale	Drainage through Rodeo to Bay	-	Unacceptable
C	14	Hills southwest of Martinez	Undev. (14)	Undev. grazing	Highways 80 and 4; Pinole Valley and Alhambra Valley Roads through residential areas	Tertiary and Cretaceous sandstone and shale	Drainage to Carquinez Straits and San Pablo and Briones Reservoirs	Cells are moderately scattered	Probably unacceptable
D	91	Central County Hills	Urban (67) Dev. Pot. (1) Undev. (23)	Urban and undev. grazing	Highways 24 and 680; St. Mary's Road and Moraga Way through residential areas	Largely Tertiary sandstone and shale	Drainage to Upper San Leandro Reservoir and Las Trampas and Walnut Cks.	-	Probably unacceptable for undev. cells
E	49	Martinez Hills	Urban (20) Dev. Pot. (29)	Urban and undeveloped grazing	Highways 4 and 680	Tertiary and Cretaceous sandstone and shale	Drainage through Martinez to Carquinez Straits	Existing Class I site in this area; air pollution problems	Unacceptable

CONTRA COSTA (cont.)

CODE	SIZE (# cells)	LOCATION	PRESENT USE	ADJACENT USE(S)	TRANSPORTATION ACCESS	GEOLOGIC MATERIALS	NEAREST SURFACE WATER	OTHER ISSUES	OVERALL AREA ACCEPTABILITY
F	15	Lime Ridge/ Concord Hills	Undev. (15)	Urban, undev. and open space	Highway 680; Ygnacio Valley Road through residential areas	Tertiary and Cretaceous sandsone and shale	Drainage through Walnut Ck. and Concord to Carquinez Straits	Probably not politically acceptable; 1 cell is scattered	Probably unacceptable for all but 1 scattered cell that is unacceptable
G	77	East of San Ramon Valley	Undev. (77)	Urban and undev. grazing	Highway 680; poor to outlying areas	Tertiary and Cretaceous sandstone and shale; much is unconsolidated	Drainage to San Ramon Ck.	-	Probably unacceptable for all but 5 scattered cells that are unacceptable
H	45	Hills East of Concord and Clayton	Urban (9) Undev. (36) (including U.S. Naval Magazine)	Urban and undev.; park U.S. Naval Magazine	Highways 24 and 4; Clayton and Marsh Creek Roads; poor to outlying areas	Tertiary and Cretaceous sandstone and shale	Drainage to Marsh Creek or to Mt. Diablo Ck. and Suisun Marsh	-	Probably unacceptable for undev. cells
I	3	Hills South of Pittsburg	Dev. Pot. (1) Undev. (2) grazing	Urban and undev.	Highway 4; Buchanan and Kirker Pass Roads	Tertiary and Cretaceous sandstone and shale	Drainage through Pittsburg; Kirker Ck. to Delta	Scattered	Unacceptable
J	56	North Central Valley Foothills	Urban (1) Dev. Pot. (28) Undev. (27)	Urban and undev. grazing and row crops	Highways 4 and 160	Tertiary sandstone and shale	Contra Costa Canal, Sand and Marsh Creeks to Suisun Marsh	-	Probably unacceptable for undev. cells

CONTRA COSTA (cont.)

CODE	SIZE (# cells)	LOCATION	PRESENT USE	ADJACENT USE(S)	TRANSPORTATION ACCESS	GEOLOGIC MATERIALS	NEAREST SURFACE WATER	OTHER ISSUES	OVERALL AREA ACCEPTABILITY
K	127	South Central Valley Foothills	Undev. (127)	Undev. grazing and row crops	Highway 4 and Byron Highway; poor to outlying areas	Cretaceous and Tertiary sandstone and shale	Marsh and Kellogg Creeks to San Joaquin River	-	Possibly acceptable
L	16	North of Altamont Pass	Undev. (16)	Undev. grazing	Highway 4 and Vasco Road; poor to outlying areas	Largely Cretaceous sandstone and shale	Kellogg Creek to San Joaquin River		Possibly acceptable
M	5	West Hills: Ala./C. Costa Counties	Undev. (5)	Undev. grazing and parks	Bolinger Canyon Rd.; very poor in outlying areas	Largely Tertiary sandstone and shale	Bolinger Creek	Scattered cells	Unacceptable
Summary	613		Urban (184) Dev. Pot.(86) Undev. (343)						Unacceptable (284) Probably unacceptable (186) Possibly acceptable (143)

MARIN COUNTY

CODE	SIZE (# cells)	LOCATION	PRESENT USE	ADJACENT USE(S)	TRANSPORTATION ACCESS	GEOLOGIC MATERIALS	NEAREST SURFACE WATER	OTHER ISSUES	OVERALL AREA ACCEPTABILITY
A	77	East of Tomales	Undev. (77)	Undev. grazing	Highway 1; very poor for trucks	39 cells of sheared Franciscan Assemblage and 38 cells of poorly consolidated Tertiary sandstone and clay shale in north	Keyes and San Antonio Creeks to Tomales Bay	Probably politically unacceptable	39 cells of unconsolidated rock are probably unacceptable
B	41	Miller Park and Marshall Hills	Undev. (41)	Undev. grazing; Tomales Bay; national seashore	Highway 1; very poor for trucks	Largely sheared sandstone and shale of the Franciscan Assemblage; 3 cells of sandstone and shale of the Franciscan Assemblage in north	Keyes and Walker Cks. to Tomales Bay; 5 cells are adjacent to Tomales Bay	Probably politically unacceptable	3 cells of unsheared rock in north are probably unacceptable
C	6	Central Marin Hills	Undev. (6)	Undev. grazing	Very poor	Sheared sandstone and shale of the Franciscan Assemblage	Nicassio and Arroyo Creeks to Nicassio Reservoir	Probably politically unacceptable; 3 cells are scattered	Unacceptable

MARIN COUNTY (cont.)

CODE	SIZE (# cells)	LOCATION	PRESENT USE	ADJACENT USE(S)	TRANSPORTATION ACCESS	GEOLOGIC MATERIALS	NEAREST SURFACE WATER	OTHER ISSUES	OVERALL AREA ACCEPTABILITY
D	165	Point Reyes	Undev. (5) National seashore(160)	Undev.; national seashore; Tomales Bay	Highway 1; very poor	Unconsolidated Tertiary sandstone and clay-shale in undev. area	Drainage to Drakes Bay, Tomales Bay, and ocean	Probably politically unacceptable even for undev. cells	Probably unacceptable for 5 undev. cells
E	53	Novato Hills	Urban (27) Dev. Pot (17) Undev. (15)	Urban and undev. grazing	Highway 101	Sheared Franciscan Assemblage with some Tertiary and Cretaceous sandstone and shale	Drainage through Novato to Bay; 8 undev.cells are adjacent to the Bay or a reservoir	Probably politically unacceptable; one scattered undev. cell	Unacceptable
F	24	Southern Marin	Urban (12) Dev. Pot. (8) Undev. (4)	Urban and undev. grazing	Highways 1 and 101	Franciscan Assemblage	Drainage to Bay or Ocean	Undev.cells are scattered	Unacceptable
Summary	366		Park or Urban (193) Dev. Pot.(25) Undev. (148)						Unacceptable (319) Probably unacceptable (47) Possibly acceptable (0)

NAPA COUNTY

CODE	SIZE (# cells)	LOCATION	PRESENT USE	ADJACENT USE(S)	TRANSPORTATION ACCESS	GEOLOGIC MATERIALS	NEAREST SURFACE WATER	OTHER ISSUES	OVERALL AREA ACCEPTABILITY
A	227	Lake Berryessa Area	Undev. (221)	Undev. grazing and recreation	Highways 121 and 128;very poor for trucks	Franciscan Assemblage and Cretaceous/Jurassic sandstone and shale; some Tertiary volcanics	Drainage to lake; (18) adjacent to lake	-	Unacceptable
B	118	Yountville/Lake Hennessy Area	Undev. (110)	Undev. grazing and vineyards	Highway 29; poor to outlying areas	Franciscan Assemblage and Cretaceous/Jurassic and Tertiary sandstone and shale; some Ter. volcanics	Drainage to three reservoirs and then to Napa River	Probably politically unacceptable	Unacceptable
C	161	Hills Northeast of Napa	Dev. Pot (38) Undev. (123)	Undev. grazing and vineyards	Highways 12 and 29; poor to outlying areas	Tertiary Sonoma volcanics	Drainage to Napa River	Probably politically unacceptable	unacceptable
D	61	Carneros Creek Area	Urban (4) Dev. Pot.(34) Undev. (23)	Undev. grazing	Highways 12, 29, and 121	Largely Tertiary & Cretaceous sandstone and shale and Tertiary volcanics	Drainage to Carneros Creek and the Napa River	-	Possibly acceptable for undev. cells
E	68	Hills in Southeast Corner of County	Undev. (68)	Undev. grazing	Highways 12 and 29	Tertiary and Cretaceous sandstone and shale	Drainage to both Napa River and Suisun Marsh	-	Possibly acceptable

NAPA COUNTY (cont.)

CODE	SIZE (# cells)	LOCATION	PRESENT USE	ADJACENT USE(S)	TRANSPORTATION ACCESS	GEOLOGIC MATERIALS	NEAREST SURFACE WATER	OTHER ISSUES	OVERALL AREA ACCEPTABILITY
F	16	Lake Curry Area	Undev. (16)	Undev. grazing	Highways 21 and 121; poor to outlying areas	Largely Cretaceous/ Jurassic sandstone and shale	Lake Curry; 1 cell adjacent to lake	-	Probably unacceptable except for 1 cell adjacent to Lake Curry that is unacceptable
Summary	651		Urban (4) Dev.Pot (72) Undev. (575)						Unacceptable (545) Probably unacceptable (15) Possibly acceptable (91)
SAN FRANCISCO COUNTY									
A	20	City of San Francisco	Urban (20)	Urban	Highways 1, 101 and 80	Franciscan Assemblage	Both Bay and ocean	-	Unacceptable
Summary	20		Urban (20)						Unacceptable (20) Probably unacceptable (0) Possibly acceptable (0)

SAN MATEO COUNTY

CODE	SIZE (# cells)	LOCATION	PRESENT USE	ADJACENT USE(S)	TRANSPORTATION ACCESS	GEOLOGIC MATERIALS	NEAREST SURFACE WATER	OTHER ISSUES	OVERALL AREA ACCEPTABILITY
A	14	San Bruno Mt. Area	Urban (14)	Urban and undev. grazing	Highways 82 and 101	Cretaceous/ Jurassic sandstone with some Franciscan Assemblage	Drainage through South San Francisco to Bay	-	Unacceptable
B	28	North San Mateo Coast Hills	Urban (9) Dev. Pot.(12) Undev. (7)	Urban and undev. grazing	Highway 1; poor for trucks	Tertiary siltstone, mudstone, sandstone and conglomerate	Ocean	2 cells (undev.)are scattered; 5 cells (undev.)are together at south end	5 undev. cells at south end are probably unacceptable
C	64	Pennisula Hills	Urban (52) Dev. Pot.(9) Undev. (3)	Undev. grazing and urban	Highway 280	Largely Tertiary sandstone	Near Crystal Springs Reservoir not adjacent	-	3 cells undev. near south end of Res. are probably unacceptable
D	9	Central San Mateo County	Undev. (9)	Undev. grazing	Highway 84; very poor for trucks	Largely Tertiary sandstone and siltstone	Bogess Ck. to San Gregorio Ck.; those cells that aren't scattered are along Bogess Ck.		Unacceptable

SAN MATEO COUNTY (cont.)

CODE	SIZE (# cells)	LOCATION	PRESENT USE	ADJACENT USE(S)	TRANSPORTATION ACCESS	GEOLOGIC MATERIALS	NEAREST SURFACE WATER	OTHER ISSUES	OVERALL AREA ACCEPTABILITY
E	20	Pescadero Point Area	Undev. (20)	Undev. grazing	Highway 1; very poor for trucks	Largely Tertiary siltstone and Cretaceous sandstone and conglomerate	Ocean; Lake Lucerne; 10 cells adjacent to water	5 cells not adj. to water are scattered	5 cells east of Pescadero Pt. are probably unacceptable
Summary	135		Urban (75) Dev. Pot. (21) Undev. (39)						Unacceptable (122) Probably unacceptable (13) Possibly acceptable (0)

SANTA CLARA COUNTY

CODE	SIZE (# cells)	LOCATION	PRESENT USE	ADJACENT USE(S)	TRANSPORTATION ACCESS	GEOLOGIC MATERIALS	NEAREST SURFACE WATER	OTHER ISSUES	OVERALL AREA ACCEPTABILITY
A	9	Milpitas Hills	Dev. Pot.(4) Undev. (5)	Undev. grazing and urban	Highway 680; very poor to undev. areas	Those cells not scattered or with dev. pot. are on sheared Franciscan material	Drainage to Calaveras Reservoir for undev. cells; no adjacent cells	-	Unacceptable
B	25	Los Altos Hills Area	Urban (15) Dev. Pot. (8) Undev. (2)	Urban	Highway 280	Largely Franciscan greenstone or Tertiary sandstone and shale	Drainage through Los Altos and Mt.View to Bay	-	Unacceptable
C	10	Scattered San Jose Area	Urban (4) Dev. Pot.(4) Undev. (2)	Urban	Highways 280, 82, 85 and 9	Largely Tertiary and Cretaceous sandstone and shale with some Franciscan Assemblage	Drainage through Los Gatos, Santa Clara and San Jose to Bay	Air pollution problems	Unacceptable
D	23	Silver Creek Area	Urban (7) Dev. Pot.(16)	Urban	Highway 101 and residential streets	Largely sheared Franciscan Assemblage,serpentine, and Cretaceous conglomerate	Drainage through San Jose to Bay		Unacceptable

CODE	SIZE (# cells)	LOCATION	PRESENT USE	ADJACENT USE(S)	TRANSPORTATION ACCESS	GEOLOGIC MATERIALS	NEAREST SURFACE WATER	OTHER ISSUES	OVERALL AREA ACCEPTABILITY
E	27	New Almaden Area	Dev. Pot.(22) Undev. (5)	Urban and undev. grazing	Highway 101	Largely Franciscan Assemblage; 3 adjacent undev. cells are Franciscan sandstone with some shale	Calero and New Almaden Reserviors; 4 cells are adjacent to Calero Reservior	2 undev. cells are scattered	3 undev. cells east of Coyote are probably unacceptable
F	94	Mt. Hamilton Area	Dev. Pot.(7) Undev. (87)	Undev. grazing; some urban	Undev.cells are inaccessible	Undev. cells are largely highly sheared shale of the Franciscan Assemblage	Remote	-	Unacceptable
G	56	Uvas Reservoir Area	Dev. Pot.(46) Undev. (10)	Urban and undev. grazing	Highways 101 and 152;very poor for trucks	Largely Franciscan Assemblage	Undev.cells that aren't scattered are adjacent to either Uvas or Chesbro Reservior	-	Unacceptable
H	22	Southeast County Hills	Dev. Pot.(1) Undev. (21)	Largely undev grazing; some urban	Highway 101 to 129; poor to outlying areas	Largely Franciscan sandstone and greenstone, and Tertiary sandstone and gravel	Pescadero and Tar Creeks	-	11 cells in center of area are probably unacceptable

SANTA CLARA COUNTY (cont.)

CODE	SIZE (# cells)	LOCATION	PRESENT USE	ADJACENT USE(S)	TRANSPORTATION ACCESS	GEOLOGIC MATERIALS	NEAREST SURFACE WATER	OTHER ISSUES	OVERALL AREA ACCEPTABILITY
I	44	Southwest County Hills	Dev. Pot.(3) Undev. (41)	Undev.grazing and orchards	Highways 101 and 152;poor to outlying areas	Eastern area is largely highly sheared shale of the Franciscan Assemblage; western area is largely Cretaceous sandstone and shale	Most cells in western area are adjacent to Coyote Creek	Cells other than on creek are scattered or inaccessible	Unacceptable
Summary	310		Urban (26) Dev. Pot.(111) Undev. (173)						Unacceptable (296) Probably unacceptable (14) Possibly acceptable (0)

SOLANO COUNTY

CODE	SIZE (# cells)	LOCATION	PRESENT USE	ADJACENT USE(S)	TRANSPORTATION ACCESS	GEOLOGIC MATERIALS	NEAREST SURFACE WATER	OTHER ISSUES	OVERALL AREA ACCEPTABILITY
A	102	Hills Northwest of Allendale	Undev. (102)	Undeveloped grazing; some urban and orchards	Highways 5 and 128; Pleasant Valley Road; poor to outlying areas	Largely unconsolidated young Tertiary sand, silt and gravel in northeast largely Tertiary sandstone with some shale in east	Most sandstone and shale is adjacent to Pleasants Creek	Probably politically unacceptable	Unacceptable
B	86	Vacaville/ Allendale Hills	Urban (12); Dev. Pot. (74)	Urban and undev. grazing and orchards	Highways 80 and 505	Some unconsolidated young Tertiary sand, silt, and gravel; some Tertiary sandstone	Drainage through Vacaville; Alamo Ck.	-	Unacceptable
C	36	Hills South of Vacaville	Undev. (36)	Undev. grazing and row crops	Highway 80	Cells in east are largely Tertiary sandstone; those cells in west are largly Cretaceous sandstone	Alamo Ck.	-	Possibly acceptable
D	40	Lake Frey Area	Urban (1) Dev. Pot. (5) Undev. (34)	Undev. grazing with some urban	Highway 80 and Wooden Valley Road	Tertiary Sonoma Volcanics	Wooden Valley Creek and Lake Frey	-	Probably unacceptable for undev. cells

SOLANO COUNTY (cont.)

CODE	SIZE (# cells)	LOCATION	PRESENT USE	ADJACENT USE(S)	TRANSPORTATION ACCESS	GEOLOGIC MATERIALS	NEAREST SURFACE WATER	OTHER ISSUES	OVERALL AREA ACCEPTABILITY
E	23	Hills Northwest of Fairfield	Urban (1) Dev. Pot.(2) Undev. (20)	Undev. grazing with some urban	Highway 80 and local roads	Cretaceous sandstones and shales	Ledgewood and Laurel Creeks	-	Possibly acceptable for undev. cells
F	13	Vacaville/ Travis Hills	Undev. (13)	Undev. grazing and row crops	Highway 80 and local roads	Young, unconsolidated sand, silt, and gravel	Alamo Creek	-	Probably unacceptable
G	26	Travis Area	Urban (18) Dev. Pot.(5) Undev. (3)	Urban	Highways 80 and 12;local roads	Tertiary sandstone and shale, and unconsolidated sand, silt, and gravel	Union Ck.	-	Unacceptable
H	43	Deverton Area	Undev. (43)	Undev. grazing and marsh	Highways 80 and 12	33 cells are unconsolidated Tertiary sand, silt, and gravel; 10 cells are Tertiary sandstone and shale	Suisun Marsh is adjacent to 5 cells of Tertiary sandstone	Wildlife area	5 cells of Tertiary sandstone not next to Marsh are possibly acceptable; the remainder are probably unacceptable
I	24	Montezuma Hills	Undev. (24)	Undev. grazing and marsh	Highways 80 and 12 with local roads	5 cells are unconsolidated Tertiary sand, silt, and gravel; remainder are Tertiary sandstone and shale	Suisun Marsh	Wildlife area	5 cells of young materials are probably unacceptable; the remainder are possibly acceptable

SOLANO COUNTY (cont.)

CODE	SIZE (# cells)	LOCATION	PRESENT USE	ADJACENT USE(S)	TRANSPORTATION ACCESS	GEOLOGIC MATERIALS	NEAREST SURFACE WATER	OTHER ISSUES	OVERALL AREA ACCEPTABILITY
J	32	Suisun/Deverton Hills	Undev. (32)	Undev. grazing and marsh	Highways 80 and 12	Largely Tertiary sandstone and shale	Suisun Marsh is adjacent to 3 cells	Wildlife area	5 cells next to Suisun Marsh are probably unacceptable; remainder are possibly acceptable
K	15	Hills Southwest of Cordelia	Dev. Pot.(1) Undev. (14)	Undev. grazing	Highways 80 and 21	Largely Tertiary and Cretaceous mudstone, sandstone, and shale	Sulphur Creek	2 cells are scattered	2 undev. cells on east side are unacceptable; remainder of undev. cells are possibly acceptable
L	135	Benecia/Vallejo Hills	Undev. (135)	Undev. grazing; 34 cells adjacent to urbanized areas	Highways 80 and 680 and Lake Herman Road	Largely Cretaceous mudstone and shale	Sulphur Creek	Existing Class I site in this area; 2 cells are scattered	Possibly acceptable except for 36 cells by urban areas or scattered
Summary	575		Urban (32) Dev. Pot.(87) Undev.(456)						Unacceptable (262) Probably unacceptable (95) Possibly acceptable (218)

SONOMA COUNTY

CODE	SIZE (# cells)	LOCATION	PRESENT USE	ADJACENT USE(S)	TRANSPORTATION ACCESS	GEOLOGIC MATERIALS	NEAREST SURFACE WATER	OTHER ISSUES	OVERALL AREA ACCEPTABILITY
A	631	Penngrove Area	Urban (24) Dev.Pot.(141) Undev. (466)	Undev. grazing	Highways 101 116 and local roads to most undev. areas; poor for outlying areas	446 cells are poorly consolitated Tertiary sandstone, siltstone and clay-shale; 95 are sheared sandstone and shale of the Franciscan Assemblage; 62 are Sonoma volcanics on the east side of valley; 7 are Cretaceous sandstone and shale	Petaluma Creek	2 undev. cells are scattered	7 cells of Cretaceous sandstone and shale are possibly acceptable 366 cells of unconsolidated or volcanic Tertiary materials that are undev. and not scattered and undev. are probably unacceptable
B	68	Tolay Creek Area	Undev. (68)	Undev. grazing	Highways 101, 37 and 121	40 cells are poorly consolidated claystone, siltstone and sandstone; 10 cells are sandstone and shale of the Franciscan Assemblage; 18 cells are Sonoma volcanics	Pelaluma Creek		Probably unacceptable

SONOMA COUNTY (cont.)

CODE	SIZE (# cells)	LOCATION	PRESENT USE	ADJACENT USE(S)	TRANSPORTATION ACCESS	GEOLOGIC MATERIALS	NEAREST SURFACE WATER	OTHER ISSUES	OVERALL AREA ACCEPTABILITY
C	30	Hills East of Sonoma	Urban (10) Dev. Pot.(19) Undev. (1)	Urban and undev. grazing	Highways 101, 37, 121, and 12; local roads	Largeley Sonoma volcanics	Various minor creeks and Sonoma Creek		Unacceptable
Summary	729		Urban (34) Dev. Pot.(160) Undev. (535)						Unacceptable (288) Probably unacceptable (434) Possibly acceptable (7)

SW/Tech Memo 8/July 1977
Linda Bledsoe

SOLID WASTE MANAGEMENT PLAN

ELEMENTS OF A COORDINATED PERMIT APPROVAL PROCESS FOR SOLID WASTE MANAGEMENT SITES AND FACILITIES

TECHNICAL MEMORANDUM NO. 8
July 27, 1977

The coordinated permit approval process for solid waste management sites and facilities is an important aspect of the Solid Waste Management Plan. This system, if carried out, could help to implement facilities recommendations of the County Solid Waste Management Plan. The proposed system is a step toward meeting objectives of fair and efficient processing of applications for solid waste management facilities. It consists of coordinative elements that address particular problems hampering current permit processing. Below are described the eight elements that make up this system.

1. Coordinating agency
2. Permit register
3. Application packet
4. Permit coordinator
5. Pre-hearing meeting
6. Clarification of agency procedures
7. Time limits
8. Monitoring and advocacy

SOLID WASTE MANAGEMENT PLAN

Elements of a Coordinated Permit Approval Process

I. Coordinative element: Coordinating agency

Description:

One agency would have the responsiblity for compiling and distributing information on the solid waste management permit approval process. This agency would not handle permit applications, but would act as a source of information on permit procedures. Another role would be to monitor the effectiveness of techniques suggested and to remain aware of other developing coordination systems.

It would require staff (one) that could compile, distribute and update information and could act as a contact.

Agency responsibilities:

1. Designate one agency to act as a coordinator - all regulatory agencies.

2. Assume role of compiling and distributing information - ABAG.

Financing:

- Compiling and distributing information - see coordinative elements II, III, VIII for cost information.

Institutional aspects:

This element would require an agreement among the regulatory agencies to designate this responsibility to ABAG, and a commitment to adhere to the elements of the established system. No legislation is required to implement this element.

Comments:

For successful implementation of the other elements of the coordination system, it is important to have one agency that will coordinate the overall process. It does not require any changes in current regulatory authority.

II. Coordinative element: Permit register

Description:

For solid waste management facilities (transfer stations, processing facilities, landfill sites) a master list would be available identifying each agency that would issue a permit or authorization. The master list would be available at a convenient location so that applicants would have only one place to go for this information. This list should contain the following information for each type solid waste facility:

- o each agency from which permit or authorization is required
- o contact person or section at each agency
- o information requirements, permit procedures, timing

Since the local general purpose agency will always require a permit, a logical location for the master list would be the county solid waste management agency. This would also be more convenient than one agency for the Bay Area. In addition, the permit register could be distributed to the other concerned agencies.

Agency responsibilities:

1. Initial compilation of the master list by soliciting information from all permitting agencies. Distribution of the master list-ABAG.
2. Updating of master list as regulations change. Will require contacting agencies periodically-ABAG.
3. Supply information to agency responsible for developing and updating the master list-all regulatory agencies.

Financing:

1. Compilation of master list (partially completed)

   Costs include staff time to complete compilation of master list.

   planner - 10 days

   From dues and grants

2. Updating of master list

   planner - 2 days

   From dues and grants

3. Supply information

   For each regulatory agency:

   staff - 1 day

Institutional aspects:

This element will not require any legislative changes nor will it require significant alteration of agencies' operating procedures.

Comments:

Developing and maintaining a master list of regulatory agencies should be relatively simple and would inform applicants of the required permits or authorizations.

III. Coordinative element: Application packet

Description:

The county solid waste management agency would have available a master application packet that contained all possible applications for solid waste facilities. This would include a cover sheet with the general information on the proposed project. For a proposed solid waste facility an application packet would be provided to each applicant by the management agency. It would be designed to include only those permit applications that would be required for the particular project.

Agency responsibilities:

1. Development and distribution of a master application packet for solid waste management facilities- ABAG.

2. Supply information requirements and application forms to the agency developing the application packet- all regulatory agencies.

3. Make available to the applicant the application packet with the appropriate permit applications depending on the type of proposal - county solid waste management agencies.

Financing:

- Development and distribution of application packet - ABAG-grants and dues (partially completed).

  4 person days
  Duplication and
  Distribution

- Design packets for applicants (on as needed basis) - county management agency (1 staff person-see permit coordinator below)

Institutional aspects:

This would not require legislation. However, it could require minor changes in some agencies' administrative procedures. The county management agency, in particular, would be affected.

Comments:

The application packet is a variation on the idea of a master application form. The agencies viewed the latter as causing more work for the applicant and as being of little use to the individual agencies. The application will not primarily aid the applicant in knowing which permits are required. With all required forms at hand the applicant could collect all necessary information and fill out the applications simultaneously.

This particular coordinative element should be relatively simple to implement and administer. The most difficult aspect will be ensuring that a knowledgeable county staff member is available to assist applicants.

IV. Coordinative Element: Permit Coordinator

Description:

A staff member would be available at each county solid waste management agency to carry out the responsibilities assigned to the counties. This person would be knowledgeable about solid waste management and about other regulatory agencies. Tasks would include the following:

1. Assist an applicant for solid waste project with reviewing the permit register to determine the permits that would be necessary from local, regional, state, and federal agencies.

2. Design an application packet for the applicant that would contain all required permit application forms for that project. Supply a list of the agency contacts and descriptions of their permit approval processes.

3. When appropriate, set up informal pre-hearing meeting(s).

Agency responsibilities:

1. Assign staff member to act as permit coordinator - county solid waste management agencies.

2. Supply permit coordinator with necessary information and update, as needed - ABAG.

Financing:

o Permit coordinator

Costs will be variable depending on the number of projects proposed within a county. For each project the amount of staff time will depend on the complexity and location of the proposed facility.

permit coordinator - ½day /project

Financed from general fund or from fees and surcharges on solid waste facilities.

Institutional aspects:

No legislation is required. However, the applicant must recognize that individual agency administrative procedures are still in effect. Even though applications are filed simultaneously with the appropriate agencies, processing may not proceed in this fashion. The permit coordinator should be aware of these procedural aspects to inform the applicant. The applicants must still file the project application with the individual agencies.

Comments:

The permit coordinator serves as a contact person that can assist applicants to obtain necessary permit applications. This person has only limited usefulness to the regulatory agencies, but from the applicants' viewpoint could save time and effort.

V. Coordinative element: Pre-hearing meeting

Description:

Depending on the complexity of a proposed solid waste project, a meeting early in the permit approval process could help anticipate problems or resolve them before the public hearing. Once the required permits have been identified, the permit coordinator may recognize appropriate times for a meeting and the necessary participants. The meeting could be one of the following types:

1. Informal staff meeting - involved agencies meet to discuss problems related to project and potential conditions that could affect another agency's review.

2. Informal staff meeting, applicant present - this would give the applicant an opportunity to respond to agencies' concerns prior to public hearing and formal review.

3. Informal public meeting - this type of meeting has the added advantage of allowing the public to air concerns prior to the hearing. This may be important on a potentially controversial project.

Agency responsibilities:

1. Initiative pre-hearing meeting - applicant, county solid waste management agency, other involved regulatory agencies.

2. Attend pre-hearing meeting - all requested agencies.

Financing:

o Attendance at meeting

Costs include time needed for familiarization with project and attendance at meeting.

o Public meeting

Costs include notification of public and pre-meeting preparation, as well as time for staff attendance.

Institutional aspects:

No legislation is required for this element; there are no limitations to any of the involved agencies participating in these pre-hearing meetings.

Comments:

This type of meeting could greatly benefit the applicant and involved agencies, some agencies do hold this type of meeting already. However, it will take initiative on the part of either the applicant or a regulatory agency to set up such a meeting. The permit coordinator should make the applicant aware that such a meeting is possible and in some cases very important. Before the meeting all the invited agencies should have received the project application.

VI. Coordinative element : Clarify or adopt procedures

Description:

All the agencies that issue permits or authorization for solid waste facilities should examine the existing regulations to determine where their procedures are vague or non-existent. In some cases, a clarification of existing permit processing procedures may be required to make them understandable to an applicant. Other agencies may need to develop and adopt new procedures. The regulations should include the following items:

1. Criteria to determine whether a project would be subject to an agency's review, whether a mattter is administrative, or whether it will require action by the policy-making body.

2. Requirements for completing, filing, and processing an application including time schedules, information needs.

3. Procedures for soliciting comments, circulating notices, conducting hearings, and issuing permits or authorizations.

4. Appeal mechanisms and procedures.

In addition, agencies should make available a clear description of the concerns and the criteria used for decision-making. This does not mean that all agencies are asked to develop substantive policies on solid waste management; however; the criteria that will be used in relation to reviews on these sites and facilities should be clear.

Time limits are discussed separately.

Agency responsibilities:

1. Review existing policies and procedures and take appropriate steps to clarify and adopt where necessary - all regulatory agencies.

2. Monitor these changes and update the permit register and application packet-ABAG.

Financing:

o Costs will include time required for an agency's staff to review regulations and for taking steps in formalize new ones.

Financed from each agencies' operating budget.

Institutional aspects:

The way that formalization of procedures occurs will depend on the type of agency. In some cases altering or adding procedures may require legislation. This must be determined separately for each regulatory agency.

Comments:

A vexing problem from the applicant's viewpoint is ambiguous requirements. If it is difficult to determine how a proposed project will be handled, and what the decision-making criteria and the processing procedures are, the applicant is less able to participate an agency's concerns or know how the project will be evaluated. The coordinative element could lend certainty to the process and help make the evaluations more consistent and fair.

VII. Coordinative elements: Time limits

Description:

Some agencies have specific time limits to which they are bound by law. In some cases an application is automatically approved if the decision-making body does not act. Other agencies, lacking the sanctions to force action or even specified time limits, may not process applications according to any particular schedule. Under this recommendation, agencies that now do not use specific time limits for making a decision on applications would do so. This may require that the decision-making body adopt time limits and make a commitment to respect them. It would be important to have a time limit specified for the total processing time within an agency, from acceptance of completed application to the final action. Any other time limits that could be set in addition would be desirable. Also agencies that are asked to comment should do so within the requested time limit. Otherwise, the agency which invited review should assume that no comment is forthcoming.

Agency responsibilities:

1. Set internal time limits and adhere to them - all regulatory agencies.

2. Comment within specified time limits - commenting agencies.

3. Inform applicants of the time limits for the regulatory agencies-county solid waste management agencies.

Financing:

o No costs incurred.

Institutional aspects:

Each agency would evaluate its own administrative procedures to determine where time limits are lacking or where internal permit processing prevent them from being met. Through the agency's policy-making body, time limits would be officially adopted, preferably with a means to ensure that they are met. The time limits should be distributed to commenting agencies that would be affected, to the county solid waste management agencies and to ABAG.

Comments:

One of the most persistent problems that applicants encounter is the length of time that the permit processing takes and the uncertainty created by unmet or non-existent time limits. This problem could be considerably improved by setting limits that an applicant could expect would be respected. It would add certainty to the overall process and could shorten the actual time to receive all required approvals.

VIII. Coordinative element: Advocacy and monitoring

Description:

In order to prevent this permit coordination system from being developed in isolation, other similar coordination efforts should be monitored. This system as it has developed draws upon the experiences of BCDC and in turn the experience in solid waste may prove useful to other agencies. In the future, it may be desirable to integrate the coordination system for solid waste with these others. Possibly, legislation may be passed that will include more far-reaching changes in regulatory authority.

The following work, either completed or not in progress is being monitored:

1. BCDC's regulation of dredging experiment - completed.

2. ABAG/OPR Industrial Siting Program - one aspect is developing a coordination system for industrial facilities.

3. OPR's permit manual - draft to be completed summer of 1977.

4. Resources Agency's Proposal to Expedite and Coordinate the State Permit Process - draft completed February 1977.

Agency responsiblities:

1. Monitor other permit coordination efforts - ABAG.

2. Share solid waste coordination experiences - ABAG.

Financing:

o Contacting other agencies and meeting where appropriate (already in progress).

planner - 12 days/year

Financed from ABAG dues and grants.

Institutional aspects:

This activity is already on-going at ABAG, it require no changes in legislation or in institutional arrangements. However, in the future, such changes may result from this expereince and that of other proposed permit coordination systems.

Comments:

Monitoring is relatively easy to do and could be very important in the success of this coordination system as well as others in the future.

SW/Tech Memo 9/August 1977
Yvonne San Jule

SOLID WASTE MANAGEMENT PLAN

ISSUES FOR FEDERAL AND STATE LEGISLATIVE AND ADMINISTRATIVE ACTION TO PROMOTE SOURCE REDUCTION AND RESOURCE RECOVERY FROM SOLID WASTE

TECHNICAL MEMORANDUM NO. 9

August 11, 1977

Introduction

Existing Federal and State policy and legislation stress the ultimate responsibility of local general purpose government, individually or in combination at an areawide scale, for solid waste management planning and operation. Enforcement is seen primarily as a State responsibility which can be delegated to local agencies that have demonstrated necessary expertise.

Federal and State policy and legislation also call for planning and implementation of solid waste management systems that reduce total dependence on conventional disposal methods such as landfills and maximize resource recovery from solid waste.

Specifically:

1. Under the California Solid Waste Management and Resource Recovery Act of 1972 (SB 5), the State Solid Waste Management Board promulgated guidelines for the preparation of mandated countywide solid waste plans, governed by a State policy that set a statewide goal for reduction of annual tons per capita going to landfills by 25% by 1980. SB 5 did not provide financial assistance either for solid waste management planning for enforcement of State standards or for implementation of resource recovery systems to meet the goal.

2. The Federal Resource Conservation and Recovery Act of 1976 (RCRA) requires State and sub-state regional plans and implementation of new and improved methods of collection, separation and recovery of solid wastes, and the environmentally safe disposal of non-recoverable residues.

   The Federal law does not go as far as SB 5 in setting a quantitative goal for reduction of wastes going to landfills. It calls for the elimination of open dumps and provides funds for planning and for research and development in improved solid waste management and resource recovery methods. Limited funds for State and regional planning have been authorized for FY 1978-79.

There are two ways in which local governments can reduce the quantities of materials going to landfills:

1. By reducing the amount of material entering the waste stream (source reduction).

2. By maximizing recycling, reuse, conversion or other productive application of materials removed from the waste stream before the remainder is landfilled (resource recovery). Materials can be separated at the source by householders and collected separately, or removed from mixed wastes, manually or mechanically, after collection at a central point.

Source reduction and recycling efforts can most productively be directed at packaging materials--paper, cardboard, glass, metal, plastics--which comprise the major portion of residential and commercial wastes.

Local governments can initiate and maintain public information programs to enlist citizen commitments to use less packaging and can establish source separation or mixed waste recovery programs to respond to Federal and State mandates. However, waste reduction at the point of manufacture and establishment of stable demand for products made of recycled materials can only be effected by Federal and State actions.

Source Reduction

Possible Federal and State actions to reduce waste production include tax incentives and disincentives, and standards and regulations to:

1. Reduce excessive packaging;

2. Require use of returnable beverage containers, standardized containers, fewer sizes; and

3. Promote product durability.

A steady demand for materials separated or recovered from waste and for products made from these materials is essential to success of community-scale source separation programs and large-scale mechanical resource recovery systems. To increase demand it is necessary that secondary materials be viewed more favorably by industry than raw materials. This means waste-derived materials at a cost below that of virgin materials and of equivalent quality. It also means products made of secondary materials at prices that are competitive with products from new materials. Only Federal and State intervention can make virgin resources more costly or more scarce and thereby stimulate development of waste processing technology to create technically acceptable waste materials.

Making Secondary Materials Cost-Competitive

Transportation Policy

The existing transportation rate structure--of low rates for virgin commodities and high rates for secondary materials--was specifically designed to subsidize western extractive industries. The unnaturally low rates for virgin materials do not cover the marginal cost for transporting them. High rates for secondary materials are necessary to make up for carriers'

losses on shipment of raw materials. Economists are coming to the view that, rather than concentrating on detailed adjustments of freight rates for processed commodities, the focus on change in transportation policy should be on raising the rates for virgin resources to the point where they cover marginal costs.

Tax and Revenue Policy

Use of the tax code to give depletion allowances for virgin materials has resulted in resource-intensive solutions to economic problems. Reform of the tax code to repeal or modify the depletion allowances for gas, petroleum and hard minerals is necessary. Increased costs for the use of virgin materials and therefore higher prices for products made from them will stimulate producers to develop new technologies to use secondary materials.

Another approach is the levying of charges on products with a short service life, and for those with high disposal costs, with products using recycled materials being exempted from requirements.

Charges on returnable containers are an incentive both to reduction and reuse.

Standards and Regulations

Standards requiring changes in product characteristics are needed to promote the substitution of recycled materials for raw resources and to minimize the use of materials that are hazardous or have high disposal costs.

Assistance to Local Resource Recovery Planning and Implementation

The data base for resource recovery planning and implementation is insufficient either to bring about the kind of substantial change in consumer behavior required by a resource recovery commitment or to enable local officials to make informed choices among alternative technologies and programs. Studies and demonstrations of source reduction programs (changes in consumption patterns, economic and energy saving, etc.) are needed, as well as thorough social, economic, environmental and institutional assessment of alternative conversion technologies. Needed Federal and State actions include:

1. Standards and enforcement policies for:

    a. Accurate and uniform (tons, rather than gallons or cubic yards, etc.) measurement of quantities and types of wastes (RCRA requires States to survey Group 1 (hazardous) wastes; there are no comparable requirements for Group 2 (municipal) and Group 3 (demolition/construction) wastes;

    b. Recording and reporting of quantities.

2. Grants for research, development and demonstration projects.

3. Loan guarantees for construction of full-scale operating facilities. (Financial markets are reluctant to make municipal loans.)

4. Construction grants for full-scale facilities if no other reasonable means of financing can be found.

Local governments individually, and through ABAG, should advocate or support proposed Federal and State actions to reduce wastes, establish markets for materials recovered from wastes and for products made from recycled wastes, and enable local and regional agencies to plan and implement programs to meet resource conservation and recovery objectives.

Possible actions which should be supported are summarized in the following table.

OBJECTIVE	FEDERAL ACTION NEEDED	STATE ACTION NEEDED
Source Reduction	Standards and Regulation of manufacturing to:	Standards and Regulation
	o reduce excess packaging.	o similar actions on manufacturing within the State.
	o prohibit manufacture of certain products, such as disposable containers.	
	o standardize containers.	
	o limit number of container sizes.	
	o increase service life of products, e.g., appliances.	
	o set design criteria (such as modular components) to make repair more attractive than replacement.	
		o support Federal actions.
	Tax and Revenue Policy	Tax and Revenue Policy
	o levy charges on returnable containers to be paid by consumers.	o similar action within the State.
	o levy charges on products with a short service life to be paid by manufacturer or importer of product in final form.	o similar action on manufacturing within the State.
		o support Federal actions.
Resource Recovery	Procurement policies to promote markets	Procurement policies to promote markets
	Transportation Policy	Transporation Policy
	o reform Interstate Commerce Commission rate structure to establish a favorable competitive position for secondary materials vis-a-vis raw materials.	o similar State action.
		o support Federal action.
	o repeal or modify subsidies and other favorable treatment to extractive industries.	o support Federal action.
	o levy charges on use of virgin materials in manufacturing.	o similar actions within State.
	o levy charges on returnable containers to be paid by consumers.	o similar actions within State.

OBJECTIVE	FEDERAL ACTION NEEDED	STATE ACTION NEEDED
Resource Recovery (Cont.)	Tax and Revenue Policy o levy charges to cover costs of disposal of products that are hazardous, or with high disposal costs--to be paid by manufacturer or importer of product in final form.	Tax and Revenue Policy o similar actions within State. o financial incentives for establishment of new industries using secondary materials. o support Federal actions.
	Standards, Regulations, Enforcement Policies o prohibit manufacture or sale of specific products. o set required percentages of secondary materials to be contained in specific products. o set maximum permissible quantities of virgin materials in specific products. o set maximum permissible quantities of component materials that may produce adverse environmental effects when products are discarded.	Standards, Regulations, Enforcement Policies o similar actions on manufacturing within the State. o support Federal actions.
Assist Resource Recovery Planning and Implementation	Standards, Regulations	Standards, Regulations and Enforcement Policies o require accurate and uniform data collection on quantities and composition of Group 2 and 3 wastes. o require regular recording and reporting of waste quantities.
	Financial Assistance o grants to local and regional planning agencies for research and development and demonstration projects. o loan guarantees for public or private construction of full-scale operating facilities. o construction grants to local governments for full-scale facilities if no other reasonable means of financing can be found.	Financial Assistance o grants to local and regional planning agencies for research and development and demonstration projects. o loan guarantees, low-interest loans for public or private construction of full-scale operating facilities. o construction grants to local governments for full-scale facilities if no other reasonable means of financing can be found.